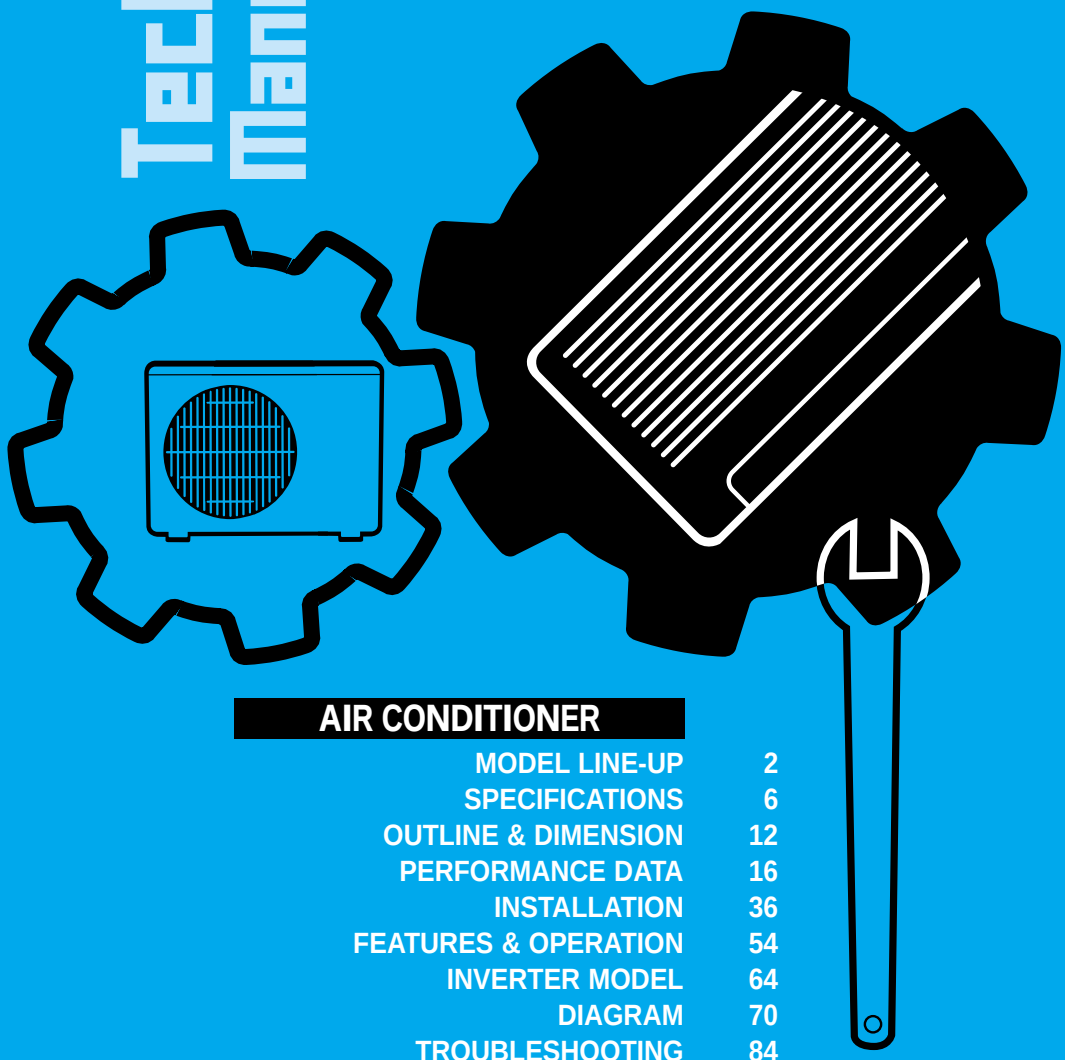
SAMSUNG

WALL MOUNTED TYPE

TECHNICAL Manual

Technical Manual



AIR CONDITIONER

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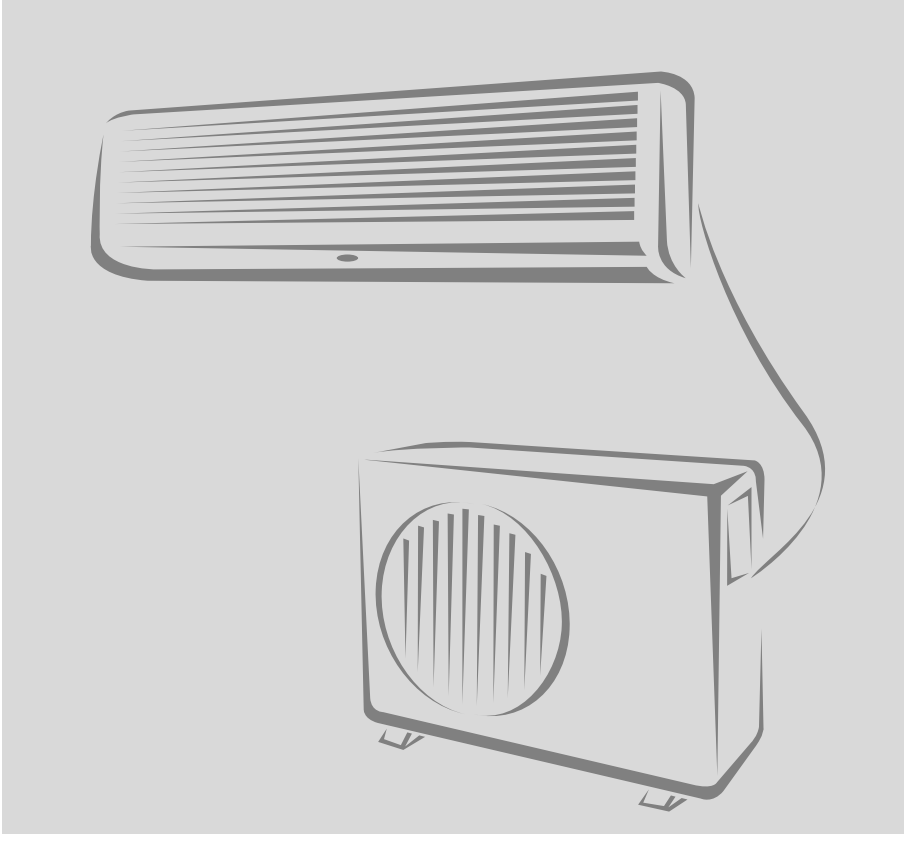
Model Line-Up

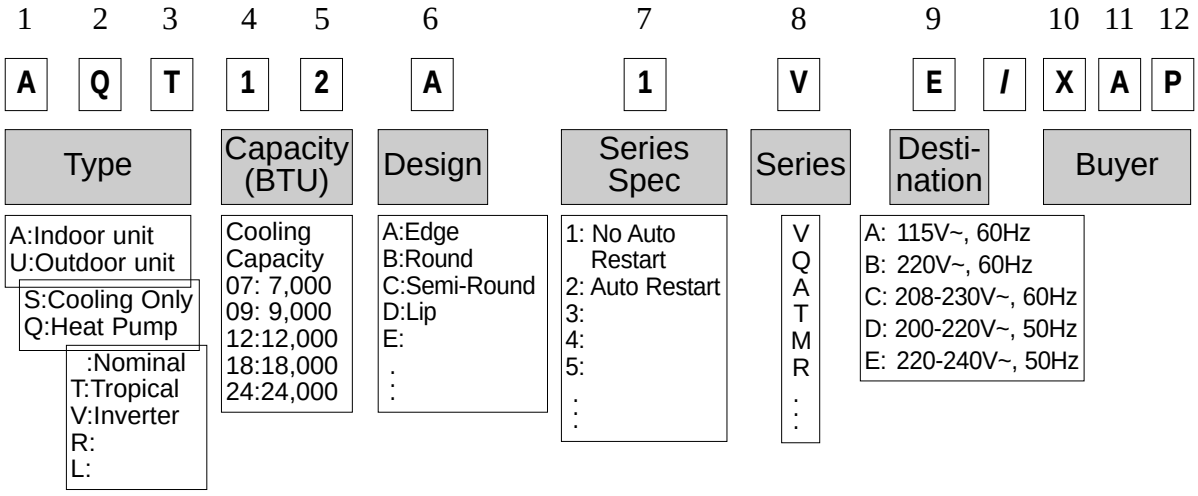
Model Identification 3

Model Line-Up 4

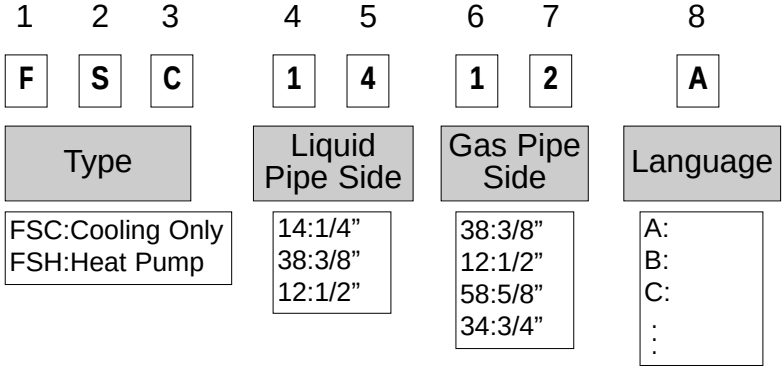


1 Model Identification

Wall Mounted Type Air Conditioner



Piping(Parts Box)



2 Model Line-Up

2000R

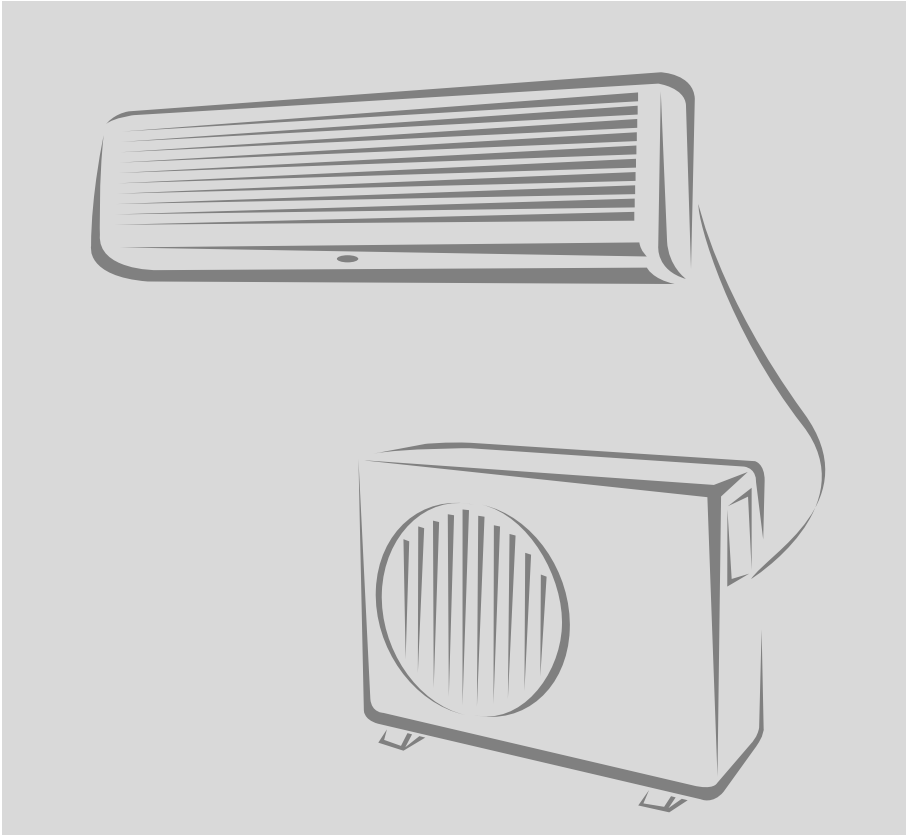
			Indoor Unit	Outdoor Unit	Piping Unit
Cooling Only	A (Steel)	7K	AS07A1(A2)ME SC07ZA1(A2)/SC07ZA1(A2)A	US07A1(A2)ME SC07ZA1(A2)XA	FSC1438E
		9K	AS09A1(A2)ME SC09ZA1(A2)/SC09ZA1(A2)A	US09A1(A2)ME SC09ZA1(A2)X/SC09ZA1(A2)XA	FSC1438E
		12K	AS12A1(A2)ME SC12ZA1(A2)/SC12ZA1(A2)A	US12ZA1(A2)ME SC12ZA1(A2)X/SC12ZA1(A2)XA	FSC1412E
		18K	AS18A1(A2)RE SC18ZA1(A2)	US18A1(A2)RE SC18ZA1(A2)X	FSC1412A
		24K	AS24A1(A2)RE SC24TA1(A2)	UST24A1(A2)RE SC24TA1(A2)X	FSC1458A
	B (Mold)	7K	AS07A3(A4)ME SC07ZA3(A4)/SC07ZA3(A4)XA	US07A3(A4)ME SC07ZA3(A4)X/SC07ZA3(A4)XA	FSC1438E
		9K	AS09A3(A4)ME SC09ZA3(A4)/SC09ZA3(A4)XA	US09A3(A4)ME SC09ZA3(A4)/SC09ZA3(A4)X	FSC1438E
Heat Pump	C (Steel)	7K	AQ07A1(A2)ME SH07ZA1(A2)/SH07ZA1(A2)A	UQ07A1(A2)ME SH07ZA1(A2)X/SH07ZA1(A2)XA	FSH1438E
		9K	AQ09A1(A2)ME SH09ZA1(A2)/SH09ZA1(A2)A	UQ09A1(A2)ME SH09ZA1(A2)X/SH09ZA1(A2)XA	FSH1438E
		12K	AQ12A1(A2)ME SH12ZA1(A2)/SH12ZA1(A2)A	UQ12A1(A2)ME SH12ZA1(A2)X/SH12ZA1(A2)XA	FSH1412E
		18K	AQ18A1(A2)RE SH18ZA1(A2)	UQ18A1(A2)RE SH18ZA1(A2)X	FSH1412A
		24K	AQT24A1(A2)RE SH24TA1(A2)	UQT24A1(A2)RE SH24TA1(A2)X	FSH1458A
	D (Mold)	7K	AQ07A3(A4)ME SH07ZA3(A4)/SH07ZA3(A4)A	UQ07A3(A4)ME SH07ZA3(A4)X/SH07ZA3(A4)XA	FSH1438E
		9K	AQ09A3(A4)ME SH09ZA3(A4)/SH09ZA3(A4)A	UQ09A3(A4)ME SH09ZA3(A4)X/SH09ZA3(A4)XA	FSH1438E
Inverter	E (Steel)	9K	AQV09A1(A2)ME SH09VA1(A2)	UQV09A1(A2)ME SH09VA1(A2)X	FSH1438E
		12K	AQV12A1(A2)ME SH12VA1(A2)	UQV12A1(A2)ME SH12VA1(A2)X	FSH1412E

Specifications

Heat Pump 8

Cooling Only 9

Inverter 10



1 Heat Pump

Item			Model	AQ09A3(4)ME/SH09ZA3(4)/SH09ZA3(4)A		AQ07A3(4)ME/SH07ZA3(4)/SH07ZA3(4)A		AQ12A1(2)ME/SH12ZA1(2)/SH12ZA1(2)A		AQ09A1(2)ME/SH09ZA1(2)/SH09ZA1(2)A		AQ07A1(2)ME/SH07ZA1(2)/SH07ZA1(2)A		AQT24A1RE/AQT24A2RE/SH24TA1		AQ18A1RE/AQ18A2RE/SH18ZA1	
				Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit
Type			-	Wall-mounting		Wall-mounting		Wall-mounting		Wall-mounting		Wall-mounting		Wall-mounting		Wall-mounting	
Perfor-mance	Cooling		BTU/h	9000		7500		12000		9000		7500		24000		18000	
	Heating		BTU/h	10000		8000		13,000		10000		8000		24000		20000	
	Dehumiditying		l/h	1.6		1.9		1.4		1.1		0.9		3.0		2.5	
	Air volume	Cooling	m3/min	6.5	20.5	5.3	20.5	7.4	19	6.0	18	5.6	16	14	36	13.5	30
		Heating		7.0	20.5	5.7	20.5	8.1	19	6.7	18	5.9	16	14.5	36	14	30
	Noise	Cooling	dB	35	48	33	47	38	50	35	48	33	47	45	58	45	55
		Heating		34	47	32	47	38	50	35	48	33	47	45	58	45	55
	Energy efficiency ratio	Cooling	BTU/h.	9.5		10.0		10.3		9.7		9.6		9.2		9.7	
		Heating		10.8		11.0		10.2		10.9		10.9		8.9		10.2	
	Power		V-Hz	1-220 / 240-50		1-220 / 240-50		1-220 / 240-50		1-220 / 240-50		1-220 / 240-50		1-220 / 240-50		1-220 / 240-50	
Power	Power Consumption	Cooling	W	950		750		1170		930		780		2600		1850	
		Heating		930		730		1270		910		730		2700		1950	
	Operating Current	Cooling	A	4.2		3.3		5.0		4.1		3.5		12.5		8.3	
		Heating		3.9		3.2		5.4		4.0		3.3		13		8.5	
	Power factor	Cooling	%	99.0		98.8		101.7		101.0		96.8		86.7		92.8	
		Heating		103.7		99.2		102.2		101.4		102.3		86.5		95.6	
	Starting current		A	30		30		30		30		30		82		35	
	Power cord	Length	m	-		-		-		-		-		-		-	
		Number of core wire		-		-		-		-		-		-		-	
	Fuse capacity		A	250V / 3.15A		250V / 3.15A		250V / 3.15A		250V / 3.15A		250V / 3.15A		250V / 3.15A		250V / 3.15A	
Size	Outer Dimension	Width x Height x Depth	mm	790 x 245 x 165	660 x 470 x 242	790 x 245 x 165	660 x 470 x 242	790 x 245 x 165	720 x 532 x 245	790 x 245 x 165	720 x 532 x 245	790 x 245 x 165	660 x 497 x 235	1080 x 275 x 204	880 x 638 x 310	1080 x 275 x 204	787 x 620 x 320
			inch	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Weight			7.7	25	7.7	25	7.7	38.0	7.7	32.0	7.7	28.0	13	63	13	46
	Refrigerant pipe	Liquid		ø6.35 x 5		ø6.35 x 5		ø6.35 x 5		ø6.35 x 5		ø6.35 x 5		ø6.35 x 5		ø6.35 x 5	
		GAS		ø9.52 x 5		ø9.52 x 5		ø12.7 x 5		ø9.52 x 5		ø9.52 x 5		ø15.88 x 5		ø12.7 x 5	
	Drain hose		D x L(mm)	ø18 x 2000		ø18 x 2000		ø18 x 2000		ø18 x 2000		ø18 x 2000		ø18 x 2000		ø18 x 2000	
	Compressor	Type		Rotary		Rotary		ROTARY		ROTARY		ROTARY		RECIPRO		ROTARY	
		Motor Type						-	-	-	-	-	-	-	-	-	-
		Rated output						-	1215	-	985	-	776	-	2660	-	1885
	Blower	Type		Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller
		Motor Type		Resin	steel	Resin	steel	Resin	steel	Resin	steel	Resin	steel	Diecasting	steel	Diecasting	steel
		Rated output	W	15	25	15	25	15	25	15	20	15	20	40	70	40	35
Heat exchanger				2ROW 12STEP	1ROW 20STEP	2ROW 12STEP	1ROW 20STEP	2ROW 12STEP	2ROW 20STEP	2ROW 12STEP	1ROW 20STEP	2ROW 12STEP	1ROW 18STEP	2ROW 15STEP	2ROW 24STEP	2ROW 15STEP	2ROW 24STEP
Refrigerant control unit				CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE	
Freezer oil capacity				360		360		410		360		360		1125		600	
Refrigerant to change(R-22)				600		600		967		640		630		1600		1550	
Protection device				MRA 12110-12008		MRA 12086-12008		MRA 12030-12008		MRA 12054-12008		MRA 12086-12008		Intemal Line Break		MRA 12016-12007	
Cooling test Condition				INDOOR UNIT : DB27°C WB19°C								OUTDOOR UNIT : DB35°C WB24°C					
Maximum operation Condition				INDOOR UNIT : DB32°C WB23°C								OUTDOOR UNIT : DB43°C WB26°C					

2 Cooling Only

Item			Model	AS09A3(4)ME/SC09ZA3(4)		AS07A3(4)ME/SC07ZA3(4)		AS12A1(2)ME/SC12ZA1(2)/SC12ZA1(2)A		AS09A1(2)ME/SC09ZA1(2)/SC09ZA1(2)A		AS07A1(2)ME/SC07ZA1(2)/SC07ZA1(2)A		AST24A1RE/AST24A2RE/SC24TA1		AS18A1RE/AS18A2RE/SC18ZA1	
				Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit	Indoor unit	Outdoor unit
Type			-	Wall-mounting		Wall-mounting		Wall-mounting		Wall-mounting		Wall-mounting		Wall-mounting		Wall-mounting	
Performance	Cooling		BTU/h	9000		7500		12000		9000		7500		24000		18000	
	Heating		BTU/h	10000		8000		-		-		-		-		-	
	Dehumiditying		l/h	1.6		1.9		1.4		1.1		0.9		3.0		2.5	
	Air volume	Cooling	m3/min	6.5	20.5	5.3	20.5	7.4	19	6.0	18	5.6	16	14.0	36	13.5	30
		Heating		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Noise	Cooling	dB	35	48	33	47	38	50	35	48	33	47	45	58	45	55
		Heating		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Energy efficiency ratio	Cooling	BTU/h.	9.5		10.0		10.3		9.7		9.6		9.2		9.7	
		Heating		-		-		-		-		-		-		-	
	Power		V-Hz	1-220 / 240-50		1-220 / 240-50		1-220 / 240-50		1-220 / 240-50		1-220 / 240-50		1-220 / 240-50		1-220 / 240-50	
Power	Power Consumption	Cooling	W	950		750		1170		930		780		2600		1850	
		Heating		-		-		-		-		-		-		-	
	Operating Current	Cooling	A	4.1		3.3		5.0		4.1		3.5		12.5		8.3	
		Heating		-		3.2		-		-		-		-		-	
	Power factor	Cooling	%	99.0		98.8		101.7		101.0		96.8		86.7		92.8	
		Heating		-		-		-		-		-		-		-	
	Starting current		A	30		30		30		30		30		82		35	
	Power cord	Length	m	-		-		-		-		-		-		-	
		Number of core wire		-		-		-		-		-		-		-	
	Fuse capacity		A	250V / 3.15A		250V / 3.15A		250V / 3.15A		250V / 3.15A		250V / 3.15A		250V / 3.15A		250V / 3.15A	
Size	Outer Dimension	Width x Height x Depth	mm / inch	790 x 245 x 165	660 x 470 x 242	790 x 245 x 165	660 x 470 x 242	790 x 245 x 165	720 x 532 x 245	790 x 245 x 165	720 x 532 x 245	790 x 245 x 165	660 x 497 x 235	1080 x 275 x 204	880 x 638 x 310	1080 x 275 x 204	787 x 620 x 320
				-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Weight			7.7	25	7.7	25	7.7	38.0	7.7	32.0	7.7	28.0	13	62	13	45
	Refrigerant pipe	Liquid		ø6.35 x 5		ø6.35 x 5		ø6.35 x 5		ø6.35 x 5		ø6.35 x 5		ø6.35 x 5		ø6.35 x 5	
		GAS		ø9.52 x 5		ø9.52 x 5		ø12.7 x 5		ø9.52 x 5		ø9.52 x 5		ø15.88 x 5		ø15.88 x 5	
	Drain hose		D x L(mm)	ø18 x 2000		ø18 x 2000		ø18 x 2000		ø18 x 2000		ø18 x 2000		ø18 x 2000		ø18 x 2000	
	Compressor	Type		Rotary		Rotary		ROTARY		ROTARY		ROTARY		RECIPRO		ROTARY	
		Motor Type						-	-	-	-	-	-	-	-	-	-
		Motor Rated output						-	1215	-	985	-	776	-	2660	-	1885
	Blower	Type		Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller	Cross-flow	Propeller
		Motor Type		Resin	steel	Resin	steel	Resin	steel	Resin	steel	Resin	steel	Die Casting	steel	Die Casting	steel
		Rated output	W	15	25	15	25	15	25	15	20	15	20	40	70	40	35
Heat exchanger				2ROW 12STEP	1ROW 20STEP	2ROW 12STEP	1ROW 20STEP	2ROW 12STEP	2ROW 20STEP	2ROW 12STEP	1ROW 20STEP	2ROW 12STEP	1ROW 18STEP	2ROW 15STEP	2ROW 24STEP	2ROW 15STEP	2ROW 24STEP
Refrigerant control unit				CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE		CAPILLARY TUBE	
Freezer oil capacity				360		360		410		360		360		1125		600	
Refrigerant to change(R-22)				600		600		967		640		630		1550		1500	
Protection device				MRA 12110-12008		MRA 12086-12008		MRA 12030-12008		MRA 12054-12008		MRA 12086-12008		Intemal Line Break		MRA 12016-12007	
Cooling test Condition				INDOOR UNIT : DB27°C WB19°C								OUTDOOR UNIT : DB35°C WB24°C					
Maximum operation Condition				INDOOR UNIT : DB32°C WB23°C								OUTDOOR UNIT : DB43°C WB26°C					

3 Inverter

Item			Model(Indoor/Outdoor)	AQV12A1ME/UQV12A1ME AQV12A2ME/UQV12A2ME SH12VA1/SH12VA1X SH12VA2/SH12VA2X	AQV09A1ME/UQV09A1ME AQV09A2ME/UQV09A2ME SH09VA1/SH09VA1X SH09VA2/SH09VA2X	Remark
Power Source			Ø-V-Hz	1-220/240-50	1-220/240-50	
Perfor-mance	Cooling	Capacity	W	3500(2300~3950)	2630(1870~2930)	
			Btu/h	12000(8000~13500)	9000(6400~10000)	
		Energy efficiency ratio	Btu/wh	9.1(11.0~7.8)	9.8(11.7~8.4)	
		Air Flow	m^3/min	7.9	7.9	
		Moisture removal	L/h	1.9	1.5	
		Noise level Indoor	dBA	35~39	33~37	
		Outdoor		50	50	
	Heating	Capacity	KW	3800(2300~4680)	2930(1750~3370)	
			Btu/h	13000(8000~16000)	10000(6000~11500)	
		Energy efficiency ratio	Btu/wh	9.0(11.4~7.5)	10.0(12.0~9.4)	
		Air Flow	m^3/min	7.9	7.9	
		Noise level Indoor	dBA	34~38	32~36	
		Outdoor		50	50	
Electrical Rating	Available voltage range		V	187~264	187~264	
	Cooling	Running amperes	A	5.9(3.6~7.4),MAX12A↓	4.0(2.7~5.3),MAX12A↓	
		Power input	W	1310(760~1690)	900(540~1140)	
		Power factor	%	98.0(94.0~99.0)	94.0(89.0~96.0)	
	Heating	Running amperes	A	6.3(3.5~9.1),MAX12A↓	4.9(2.8~5.7),MAX12A↓	
		Power input	W	1410(740~2080)	1000(510~1230)	
		Power factor	%	98.0(92.0~99.0)	91.0(84.0~95.0)	
	Starting current		A	12↓	12↓	
	Fuse capacity		AxV	3.15x250 / 20x250	3.15x250 / 20x250	
	Power cord		AxV	15 x 250	15 x 250	
	Cable-connector		mm^2xG	1.5 x 4	1.5 x 4	
Com-pressor	Type		-	Single Rotary	Single Rotary	
	Model name		-	48A135RV1JL	44B092QV1JL	
	Safety devices		-	204CT	204CT	
Fan motor	Indoor	Model name	-	AMPFS-022WTVA	AMPFS-022WTVA	
		Running capacitor	µF x VAC	1.2µF / 450V	1.2µF / 450V	
	Outdoor	Model name	-	AMASS-020WTVB	AMASS-020WTVB	
		Running capacitor	µF x VAC	1.2µF / 450V	1.2µF / 450V	
Refrigerant tube		Narrow tube : Liquid	mmxMT	OD 6.35 x 5	OD 6.35 x 5	
		Wide tube : Gas	mmxMT	OD 12.7 x 5	OD 9.52 x 5	
Capillary tube		Cooling	mm	ID 1.7 x 800	ID 1.5 x 1000	
		Heating	mm	ID 1.7 x 400	ID 1.7 x 400	
Refrigerant to charge (R22)			gr	880	690	
Dimension		Indoor unit : WXHXD	mm	790x245x165	790x245x165	
		Outdoor unit : WXHXD	mm	720x532x245	720x532x245	
Weigth		Indoor unit	Kg	7.7	7.7	
		Outdoor unit	Kg	41.0	37.0	

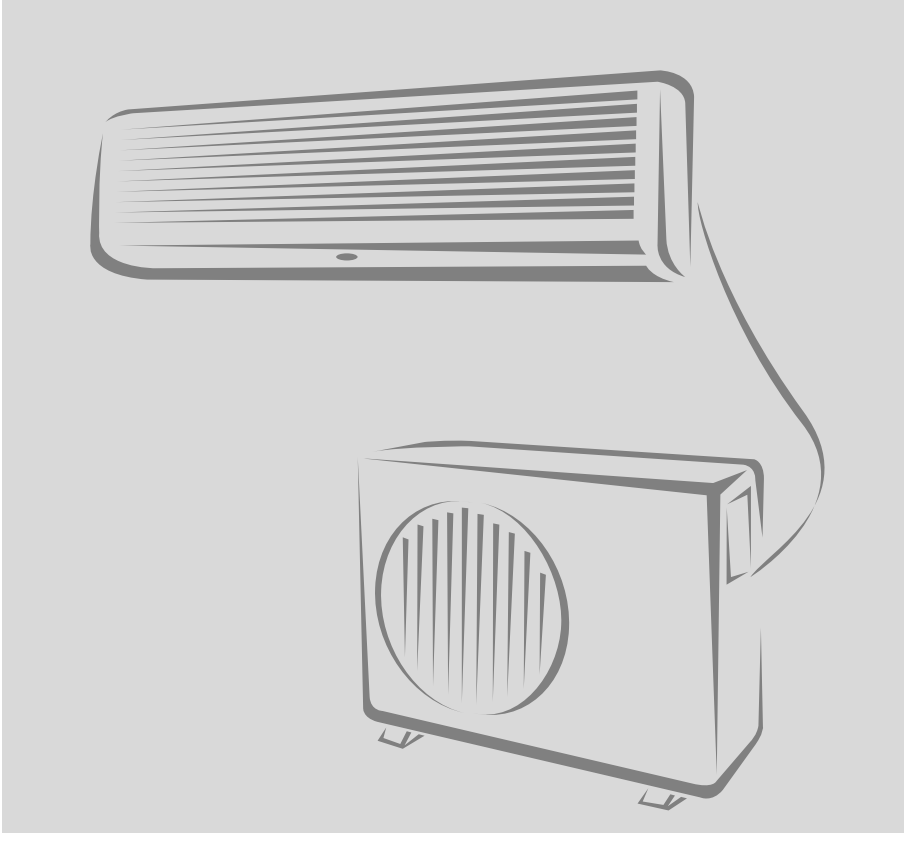
Remark : Text condition

	Indoor room	Outdoor room
Cooling test	DB27˚C / WB19˚C	DB35˚C / WB24˚C
Heating test	DB20˚C /	DB 7˚C / WB 6˚C

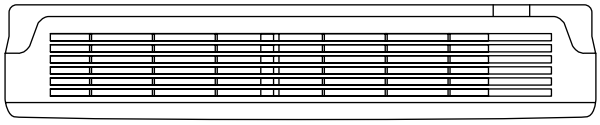
Outline & Dimension

Indoor Unit 13

Outdoor Unit 14

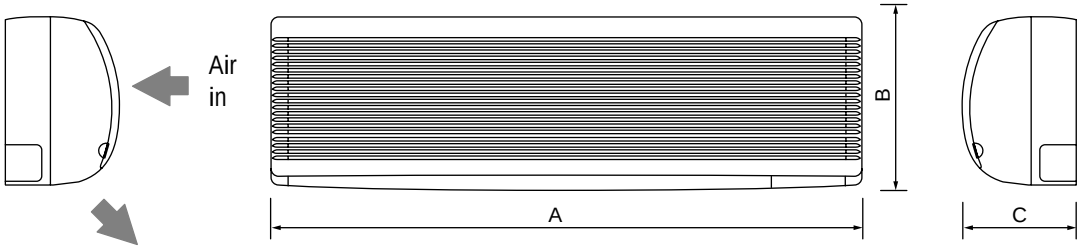


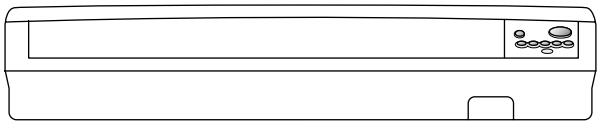
1 Indoor Unit



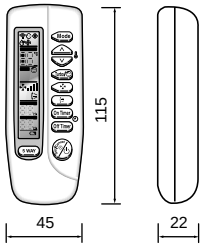
Type	A	B	C
7K/ 9K/ 12K	190	246	165
18K/ 24K	1080	275	204

(Front view)

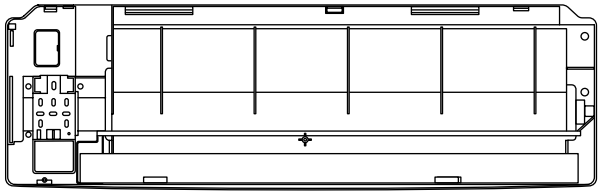




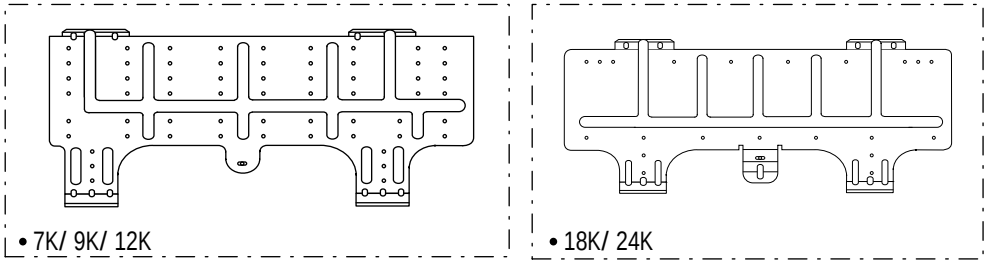
(Remote control)



(Rear view)

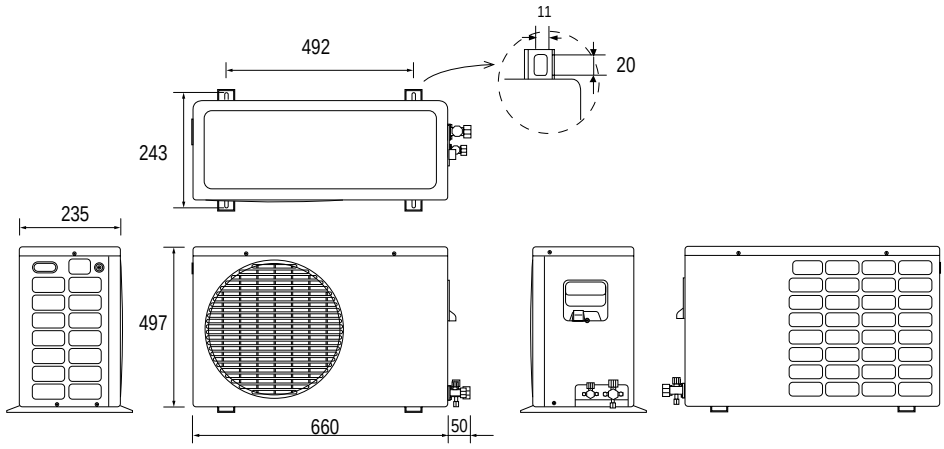


Installation plate

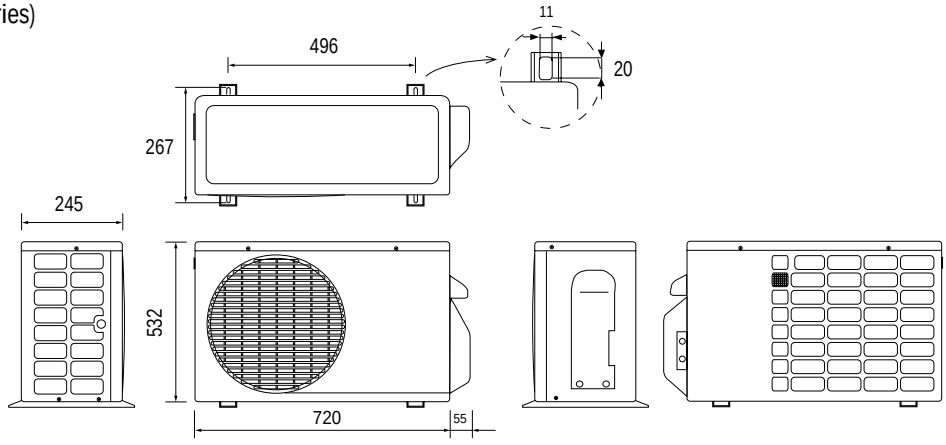


2 Outdoor Unit

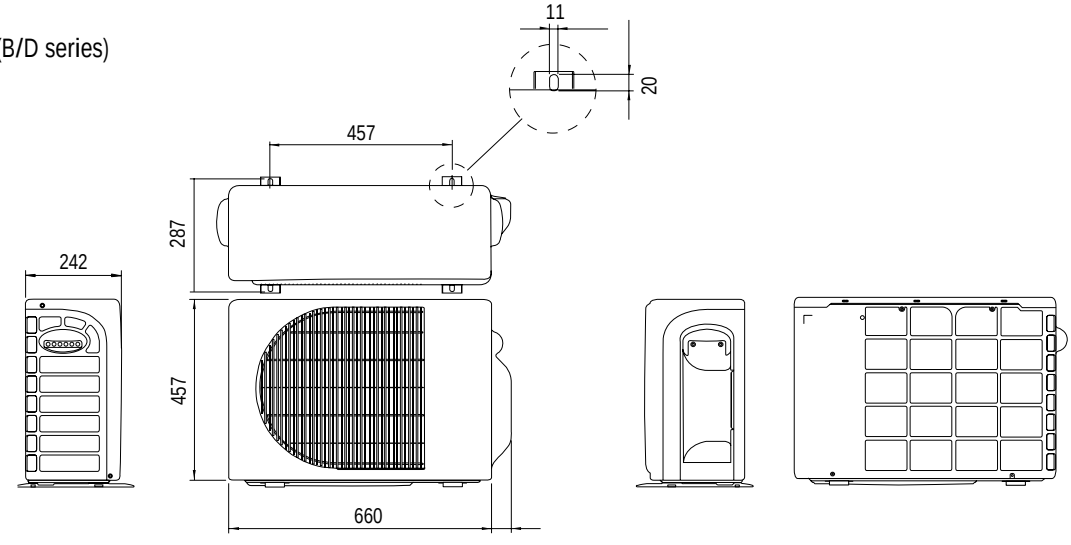
7K (A/C series)



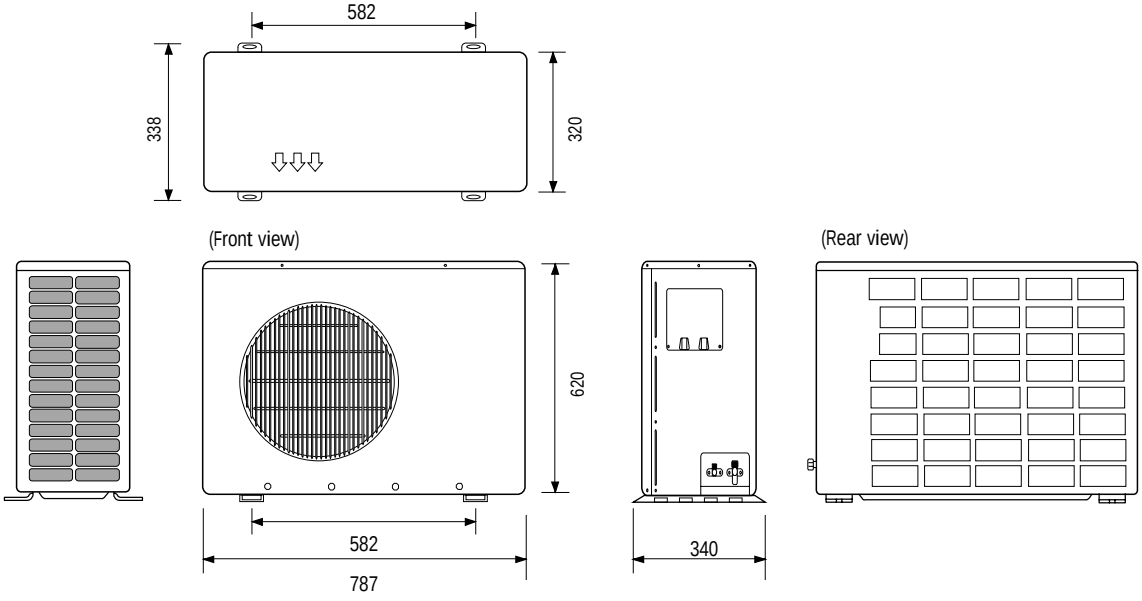
9K /12K (A/C/E series)



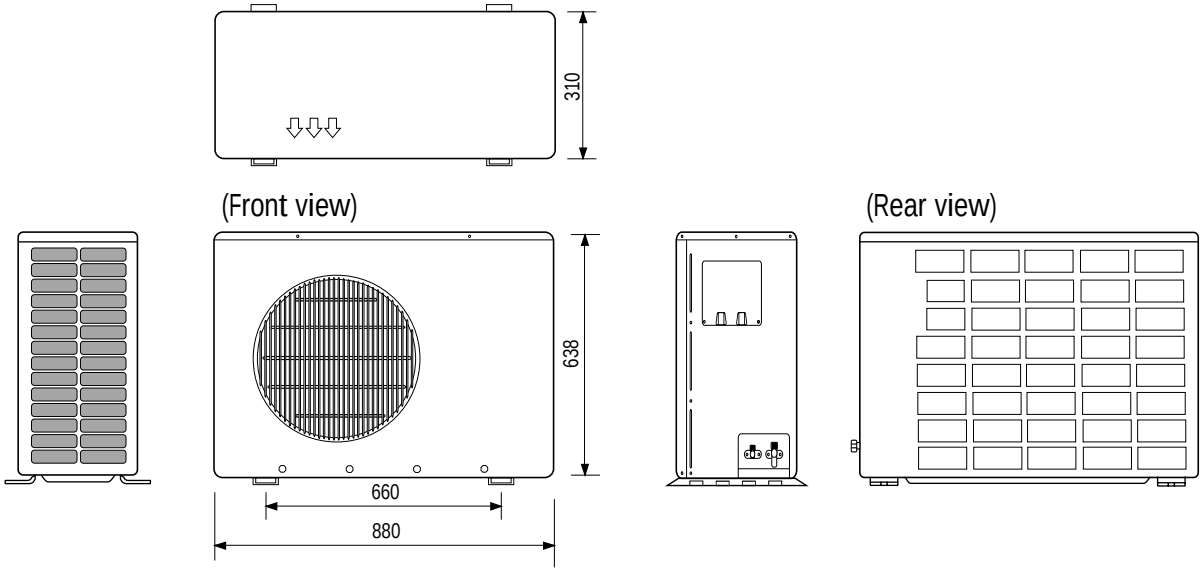
7K /9K (B/D series)



18K (A series)



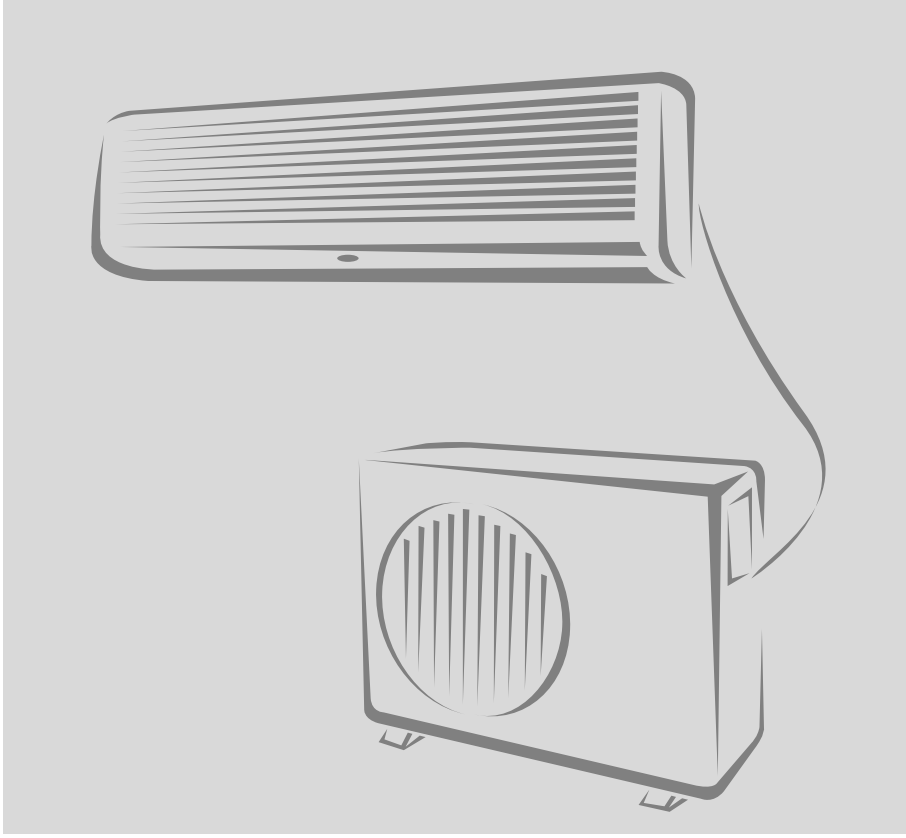
24K (A series)



Performance Data

Performance Data 17

Noise Level Measurement 26



1 Performance Data

1 Capacity

7,000BTU

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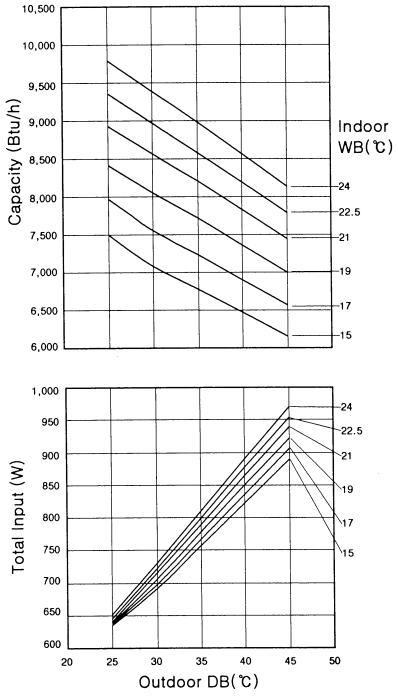

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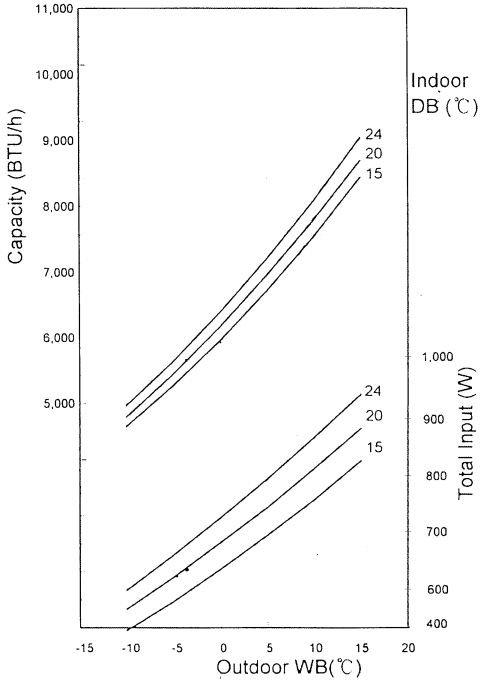

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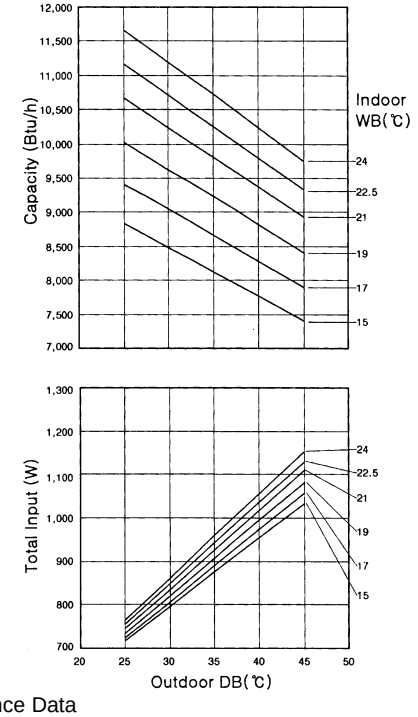

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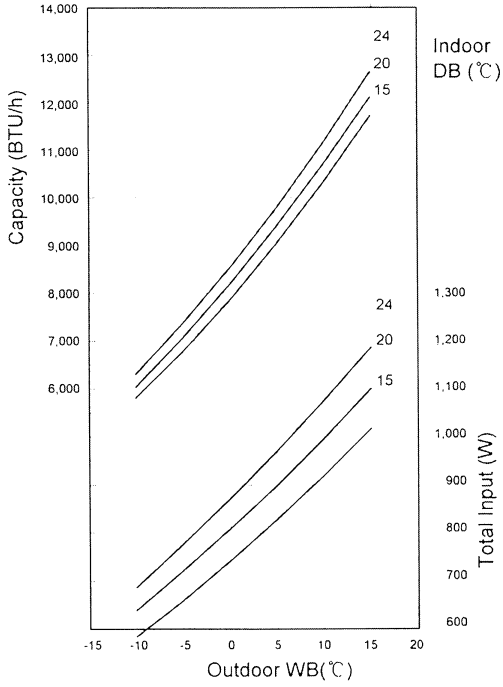

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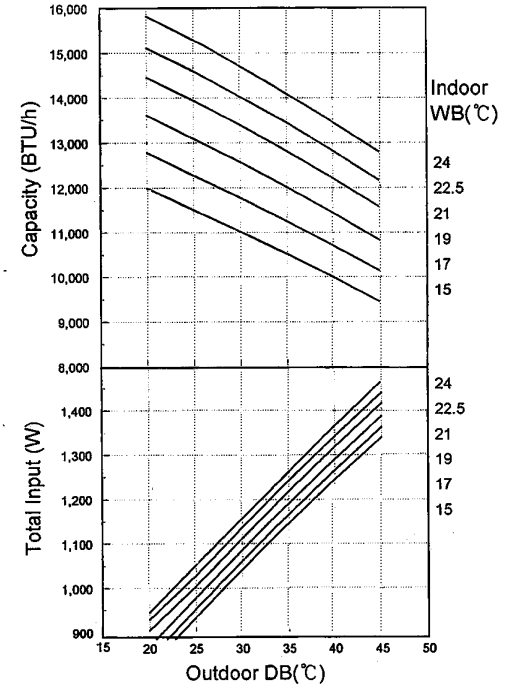

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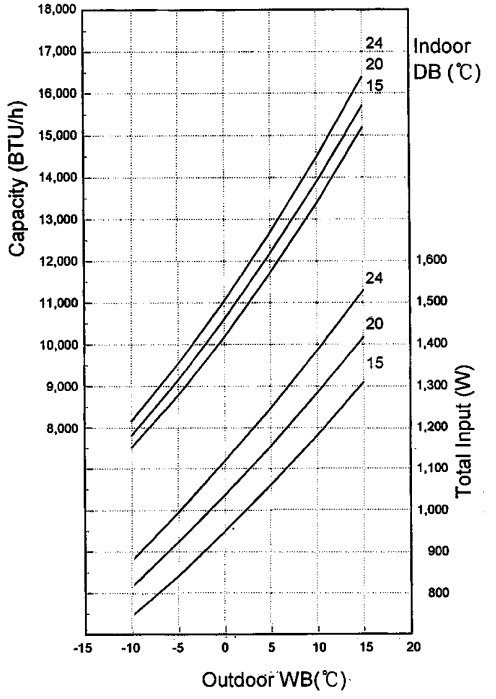

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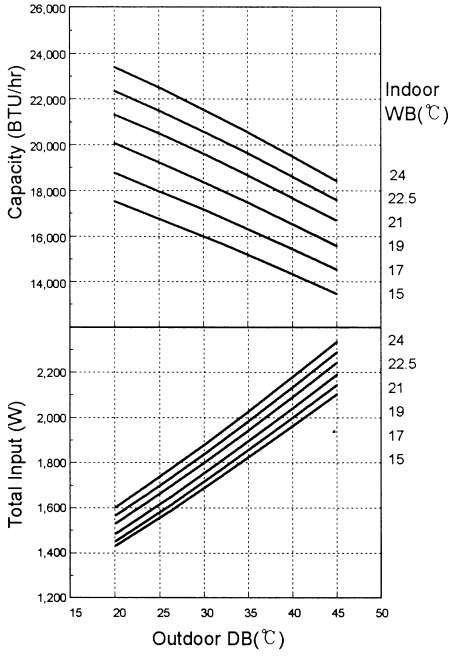

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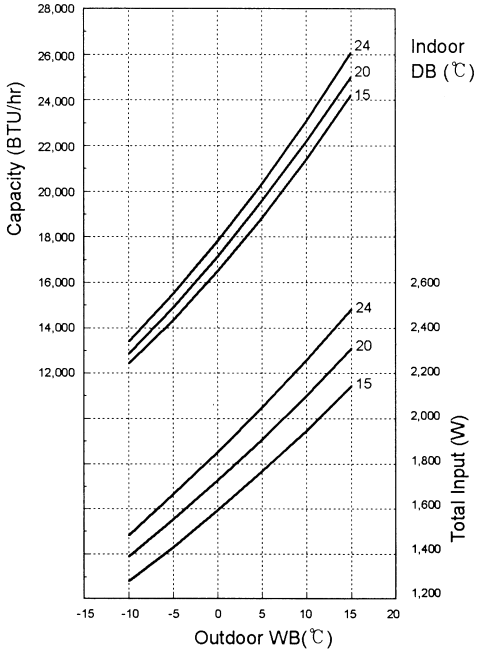

24,000BTU

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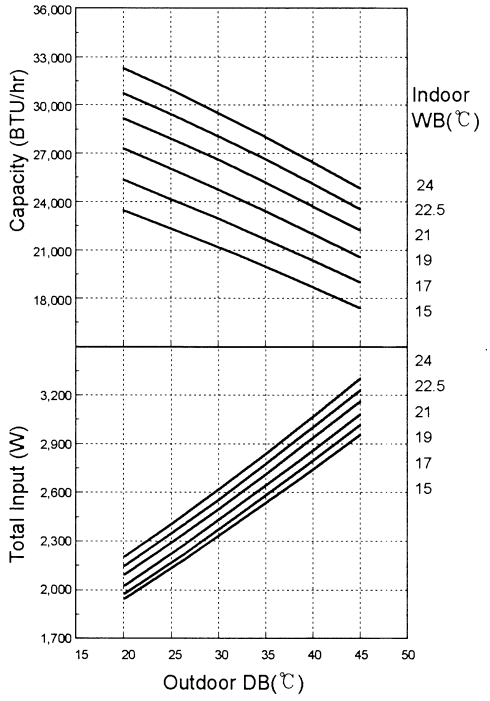

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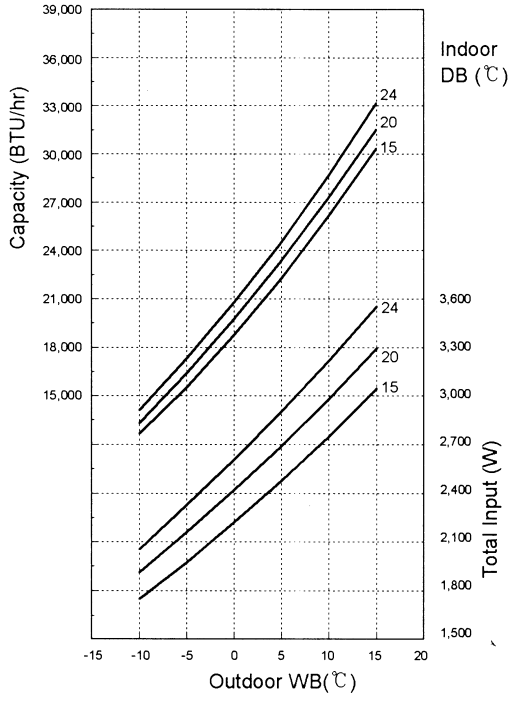

2 Inverter model

9000 BTU

HIGH

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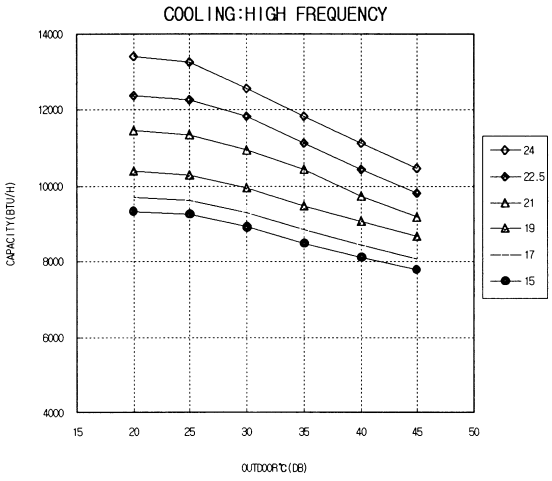

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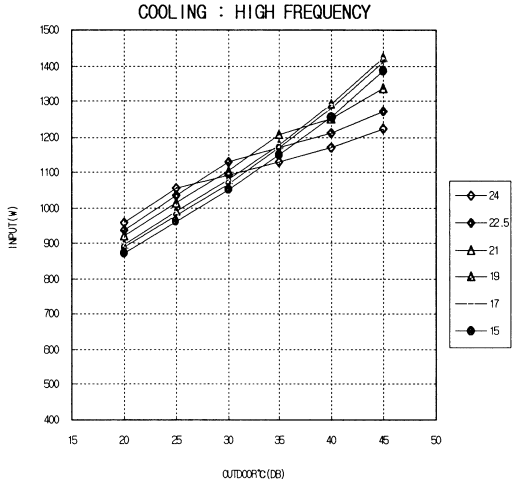

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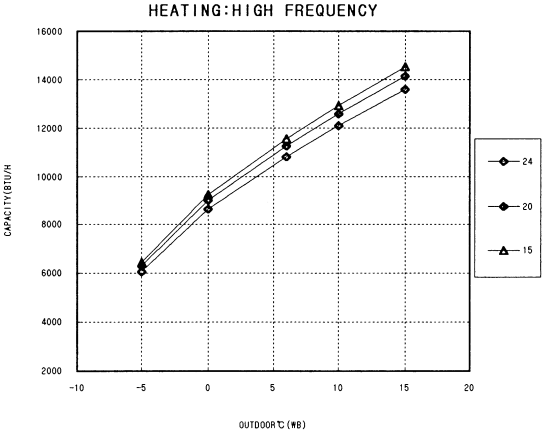

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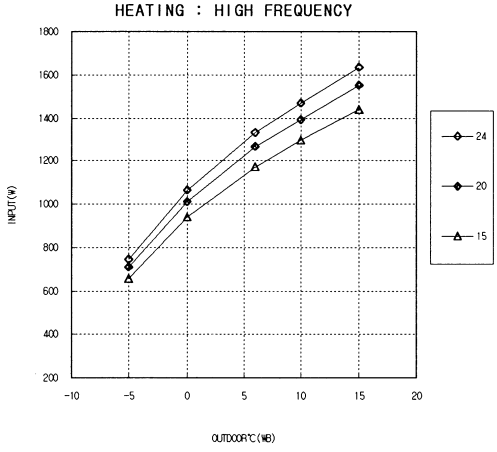

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MID

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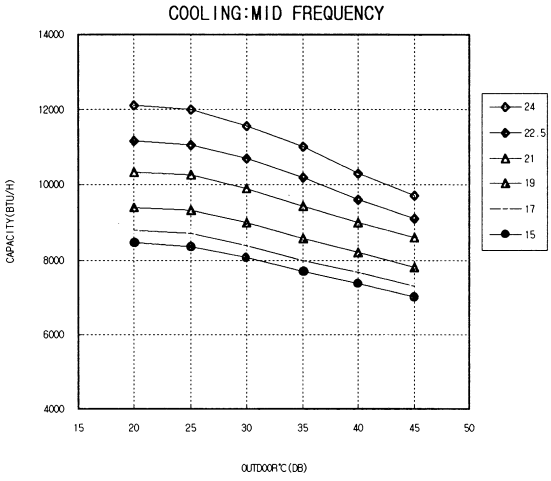

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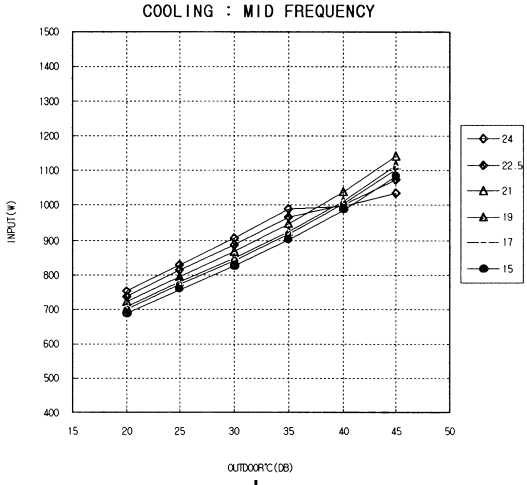

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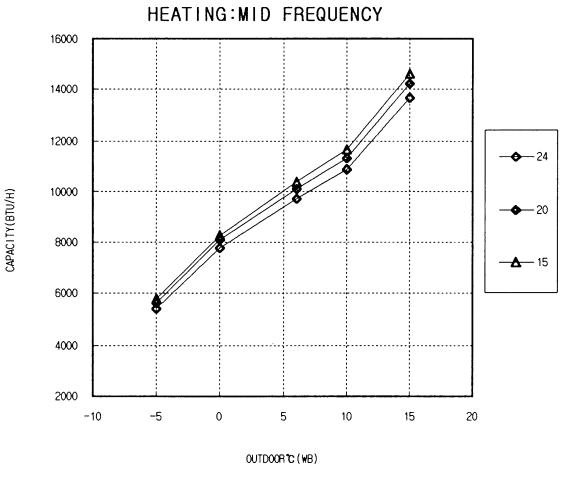

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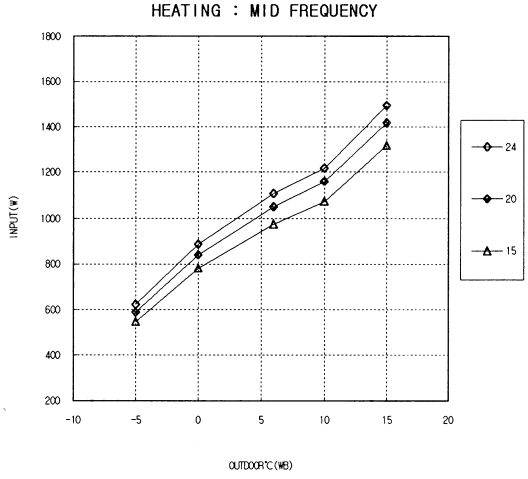

b

LOW

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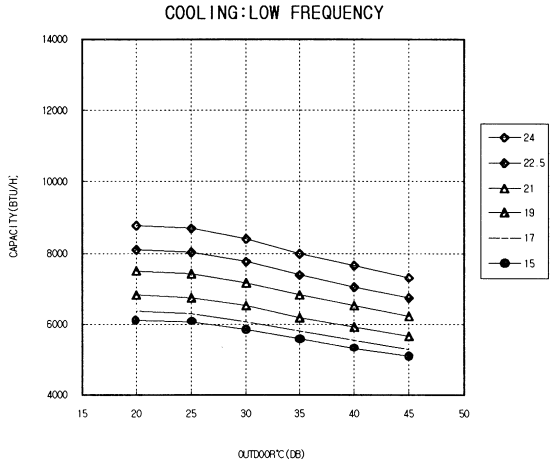

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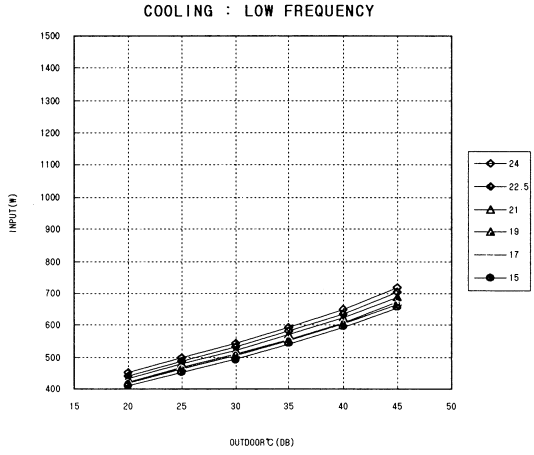

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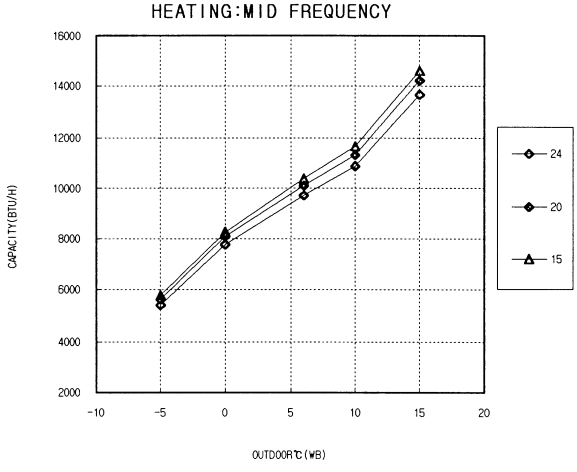

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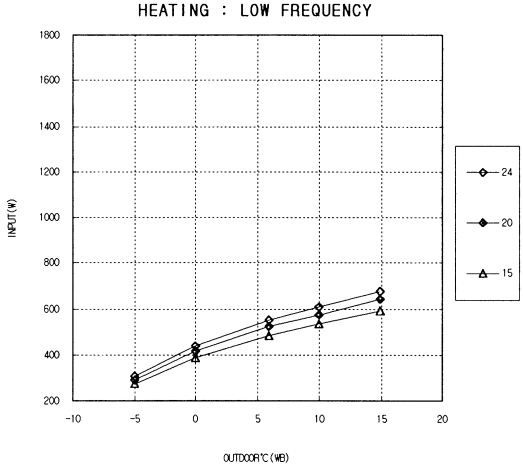
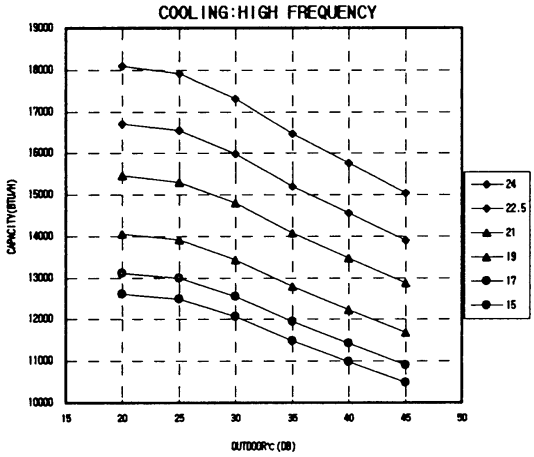


b

12000 BTU

HIGH

<Cooling>



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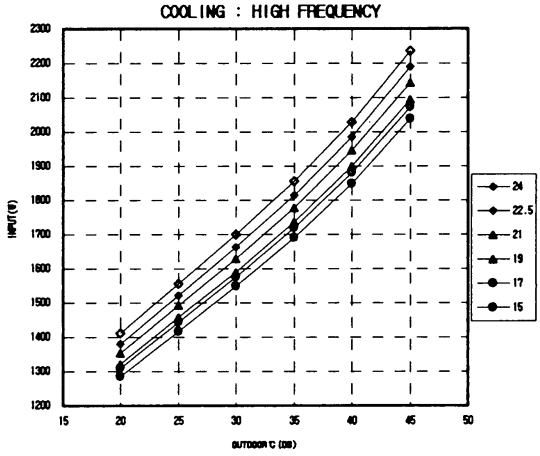

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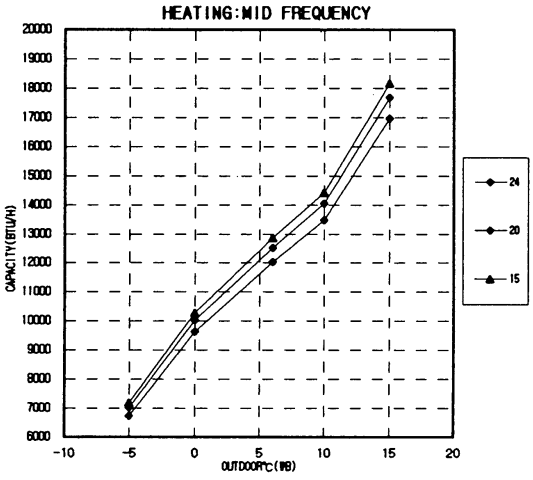

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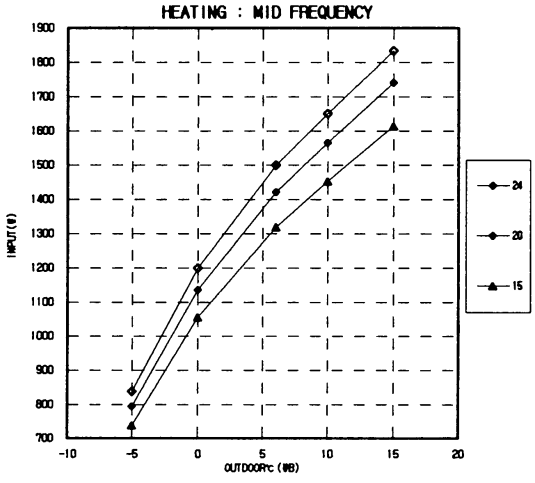

b

MID

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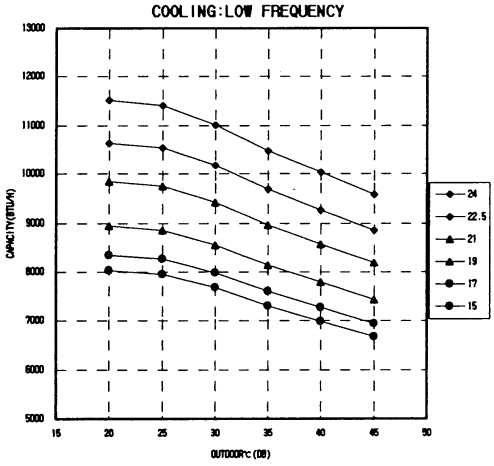

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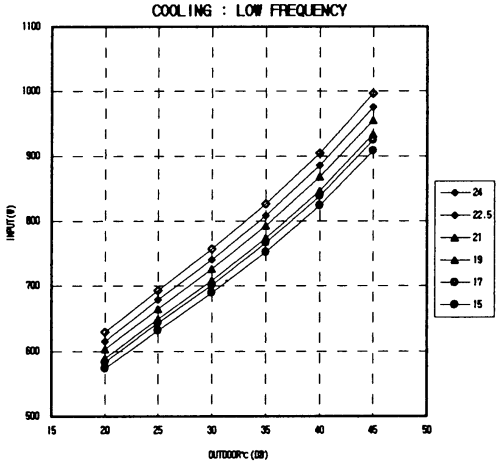

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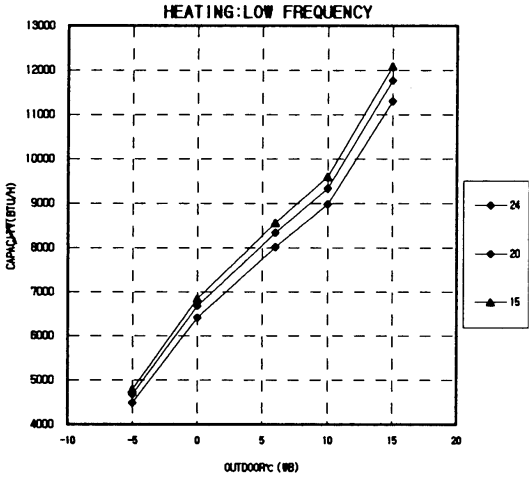

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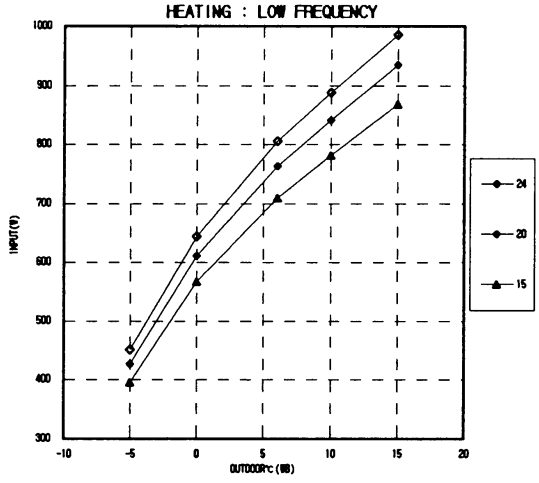
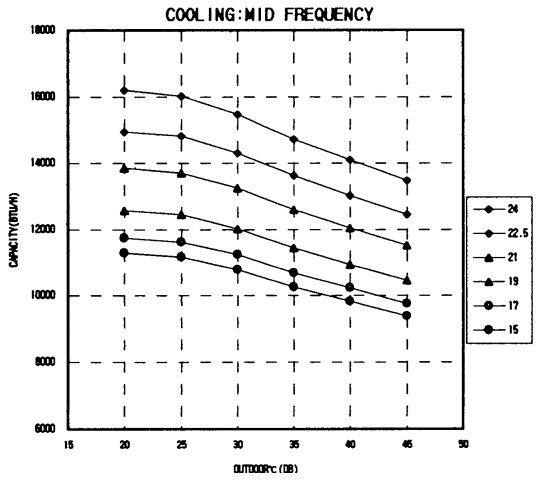


b

LOW

<Cooling>



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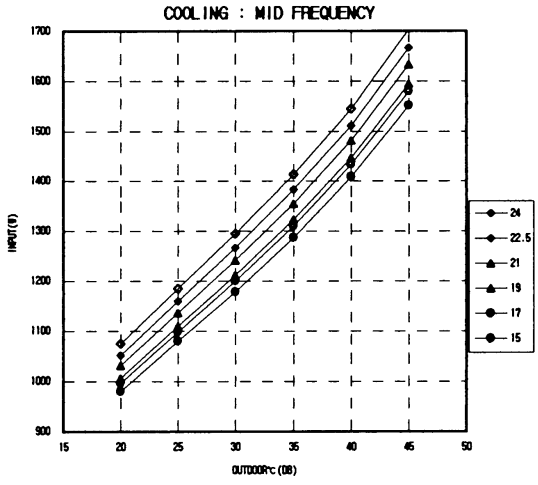

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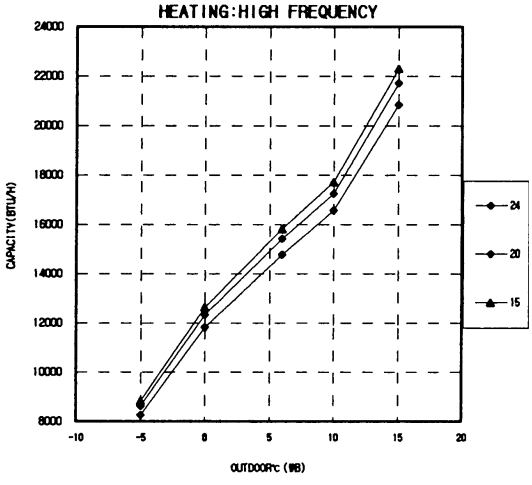

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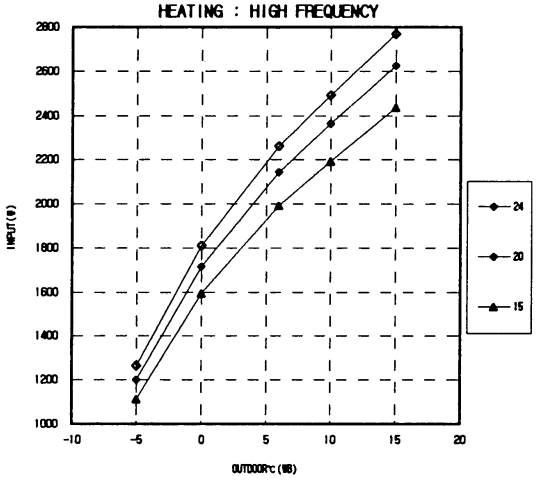
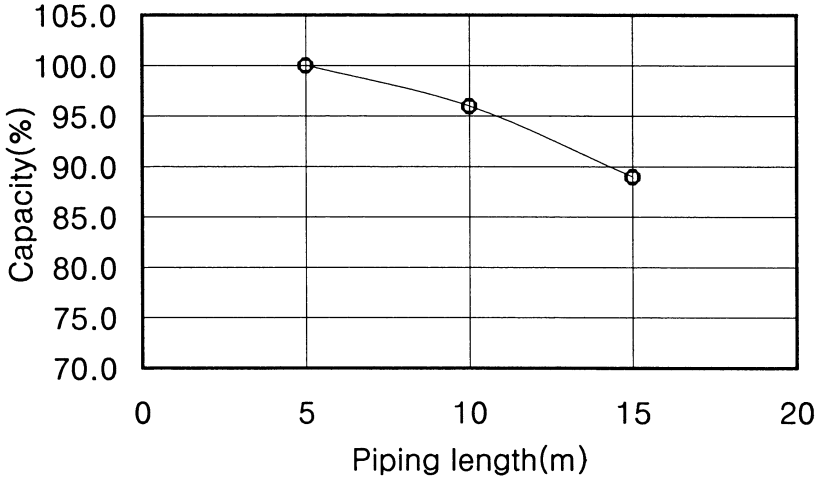
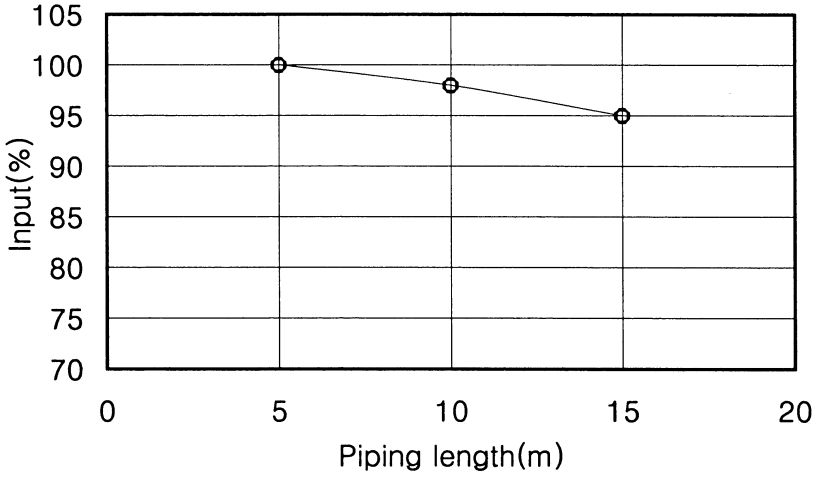


b

3 Cooling Capacity Correction Factors



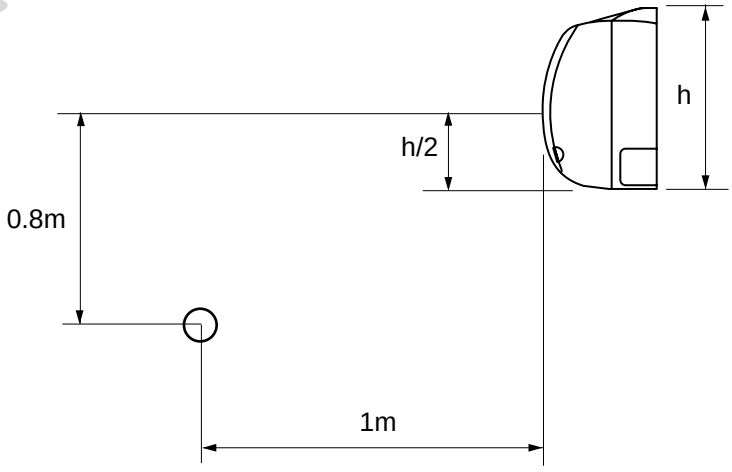


If the piping length exceed more than 5m, 7k, 9k models add refrigerator by 20g per meter.
12k, 18k models add refrigerator by 30g per meter.
24k models add refrigerator by 40g per meter.

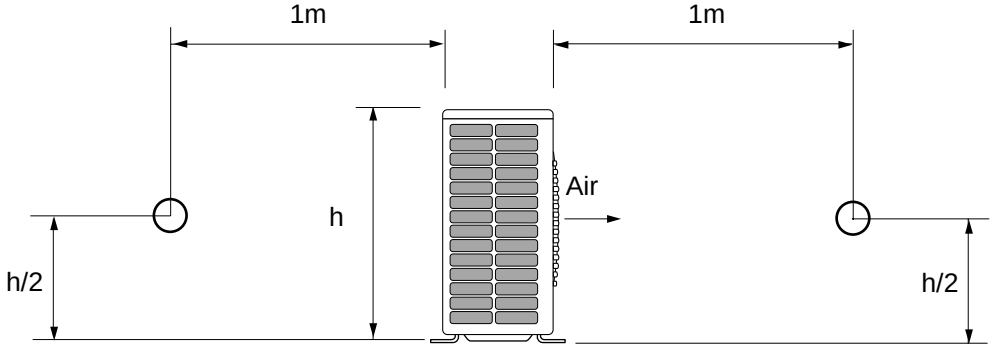
2 Noise Level Measurement

1 Noise Level Check Point

INDOOR UNIT



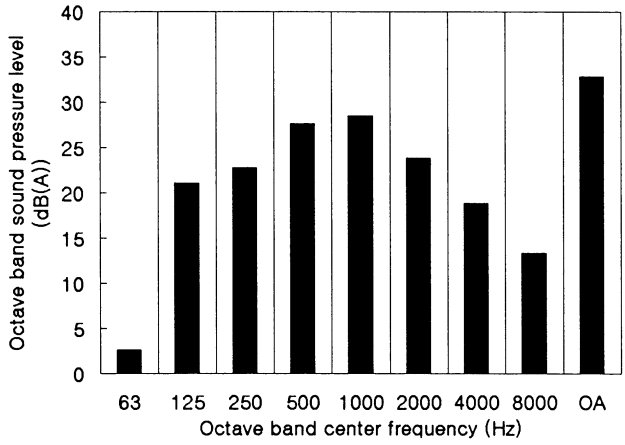
OUTDOOR UNIT



2 "B/D" Type Noise Level Histogram(Indoor Unit)

7,000BTU

<Cooling>



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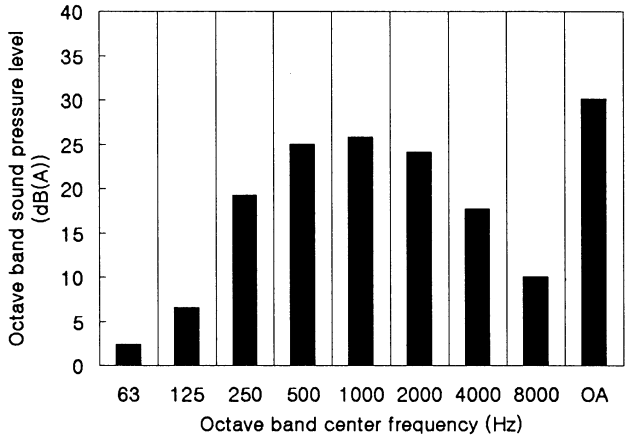
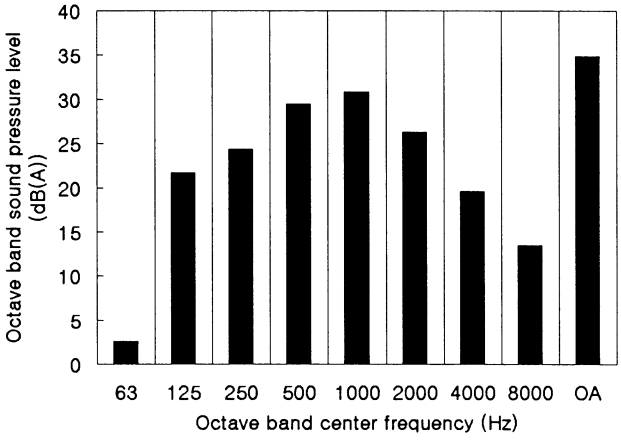


9,000BTU

<Cooling>



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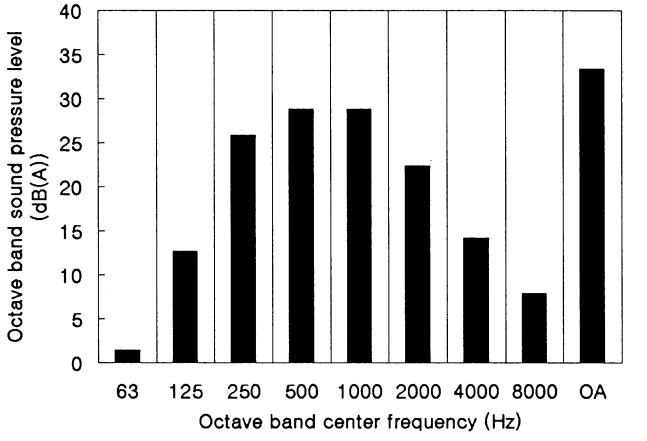

3 "B/D" Type Noise Level Histogram(Outdoor Unit)

7,000BTU

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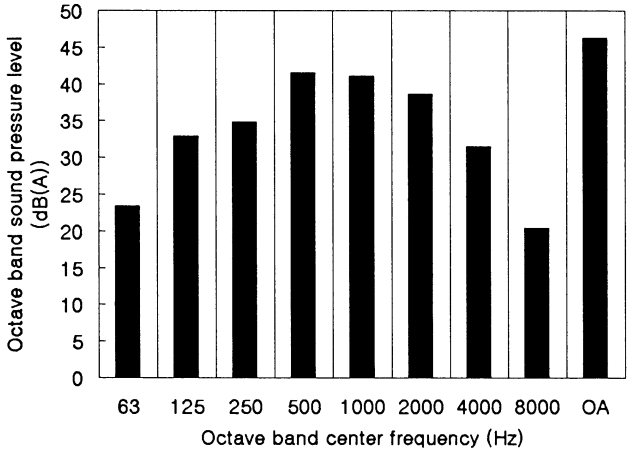

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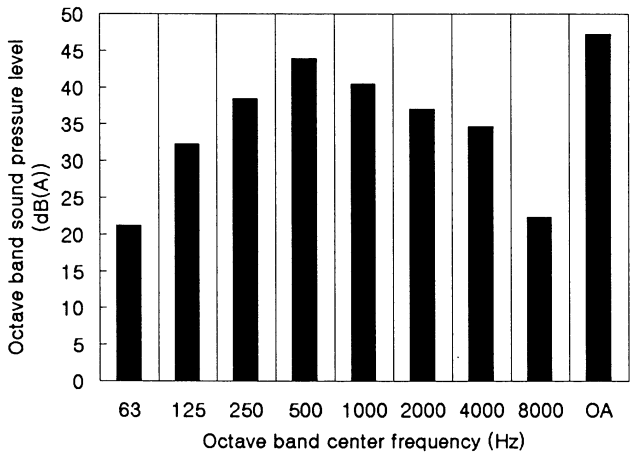

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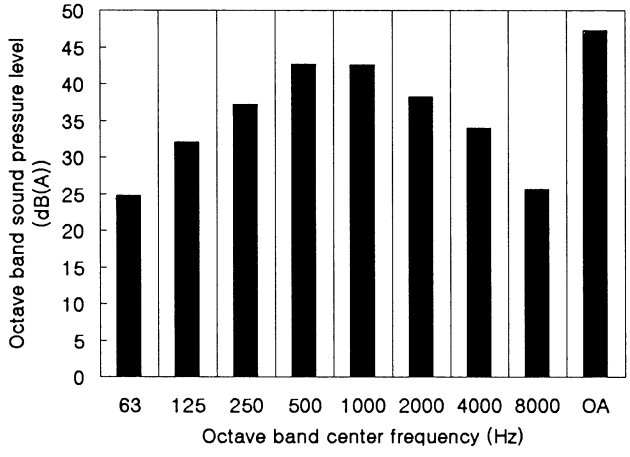

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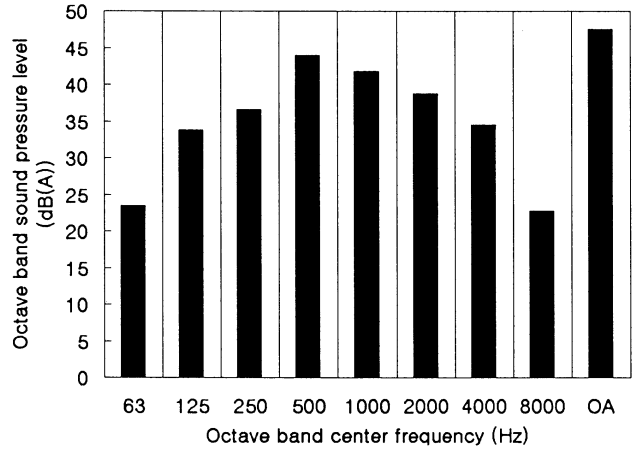

4 "A/C" Type Noise Level Histogram(Indoor Unit)

7,000BTU

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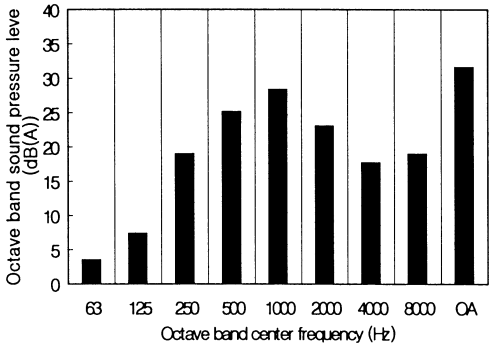

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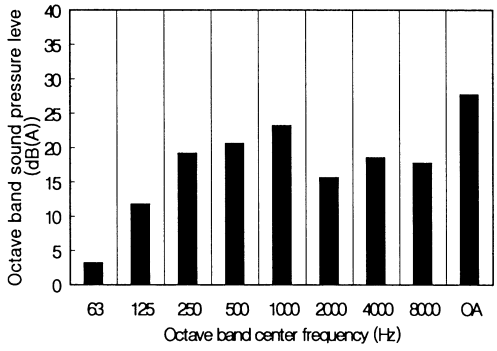

9,000BTU

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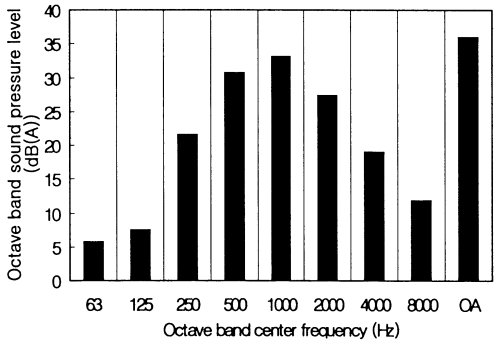

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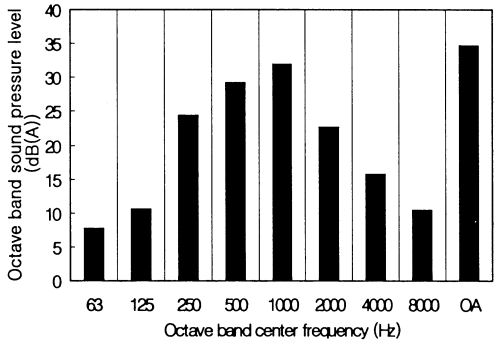

12,000BTU

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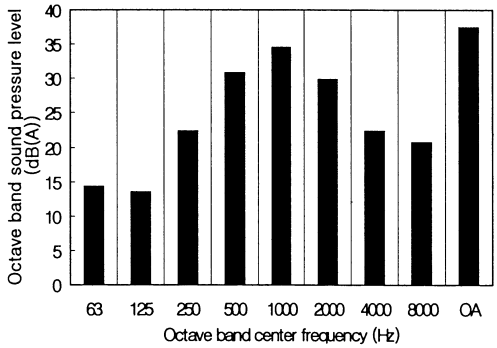

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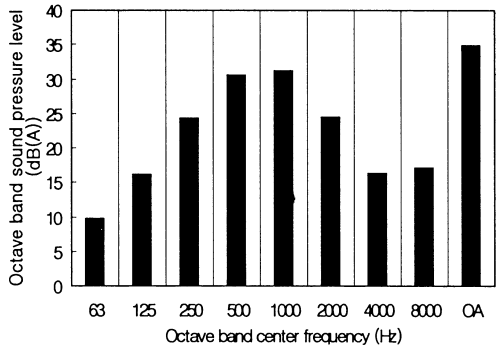

5 "A/C" Type Noise Level Histogram (Outdoor Unit)

7,000BTU

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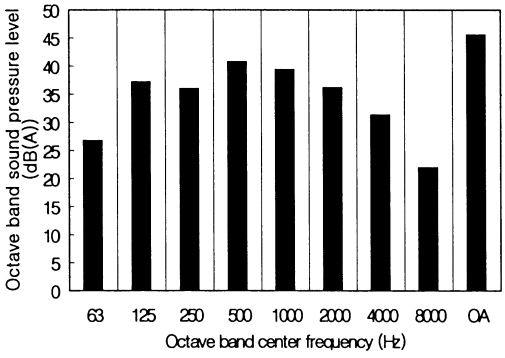

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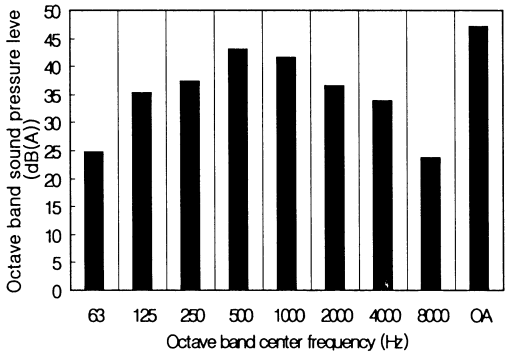

9,000BTU

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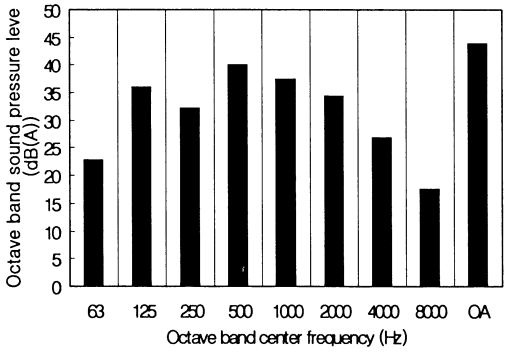

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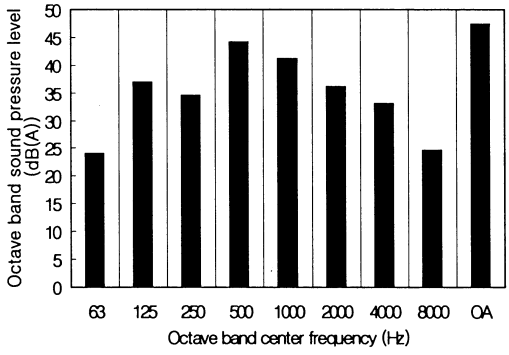

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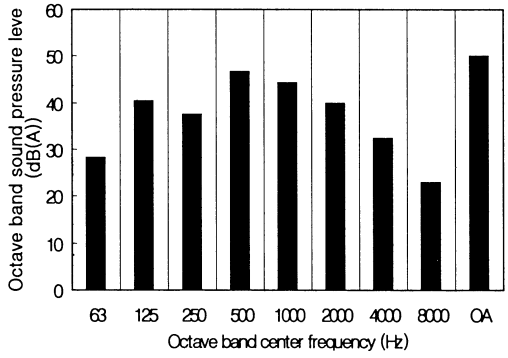

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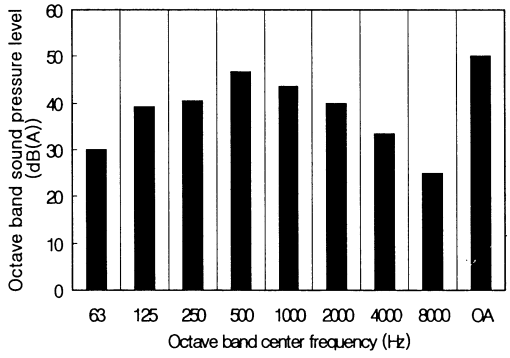

6 Noise Level Histogram(Indoor Unit)

18,000BTU

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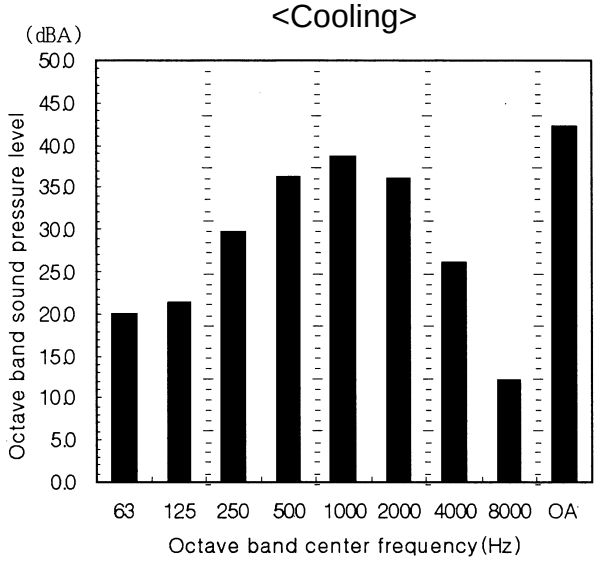

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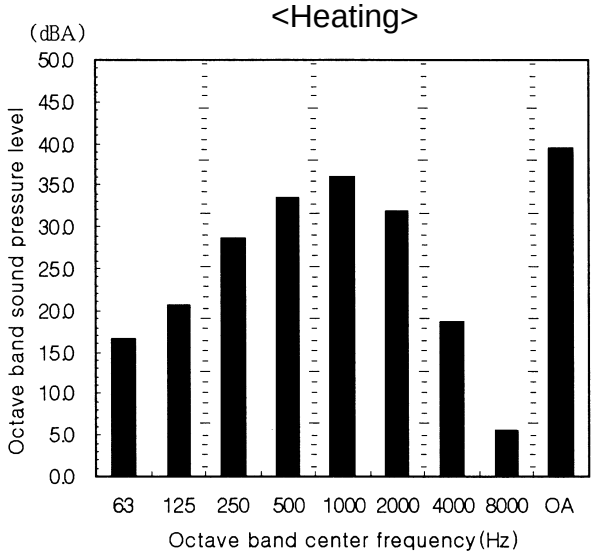

24,000BTU

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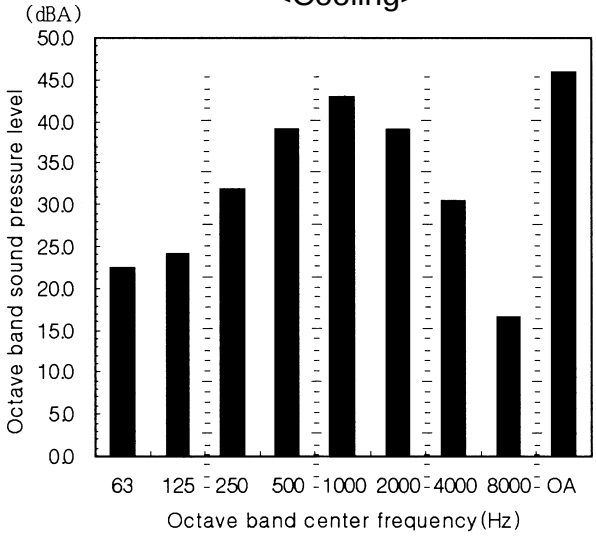

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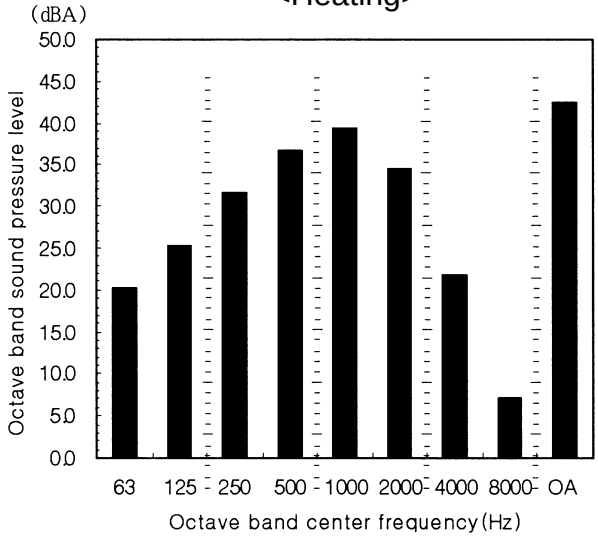

7 Noise Level Histogram(Outdoor Unit)

18,000BTU

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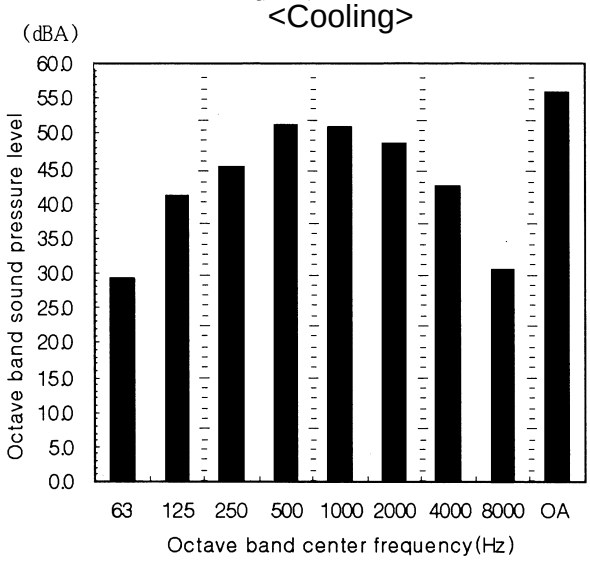

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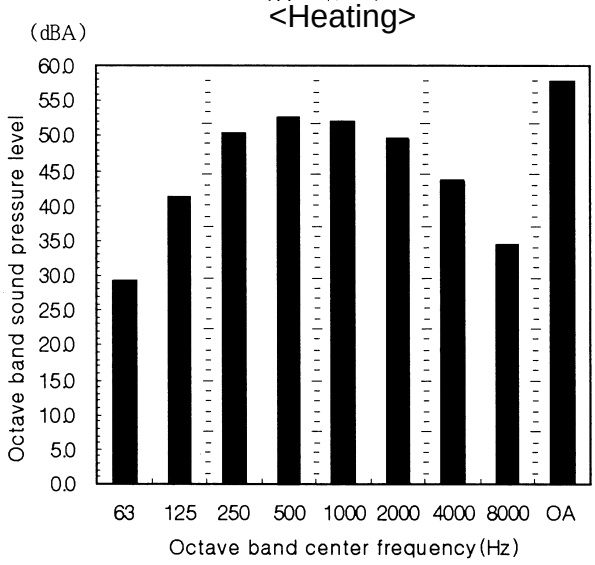

24,000BTU

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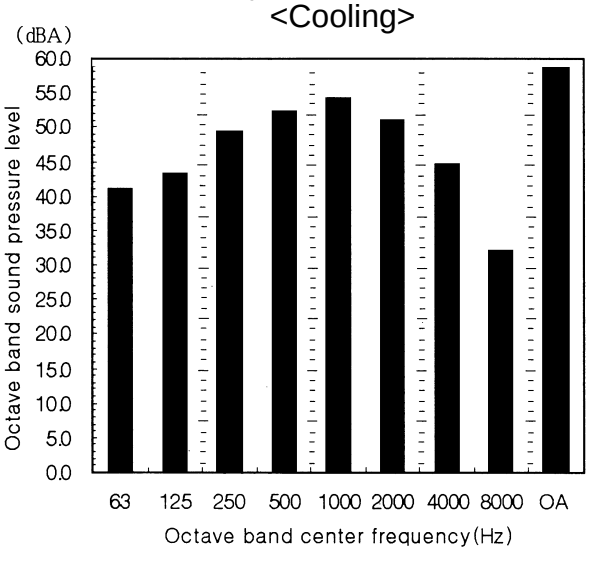

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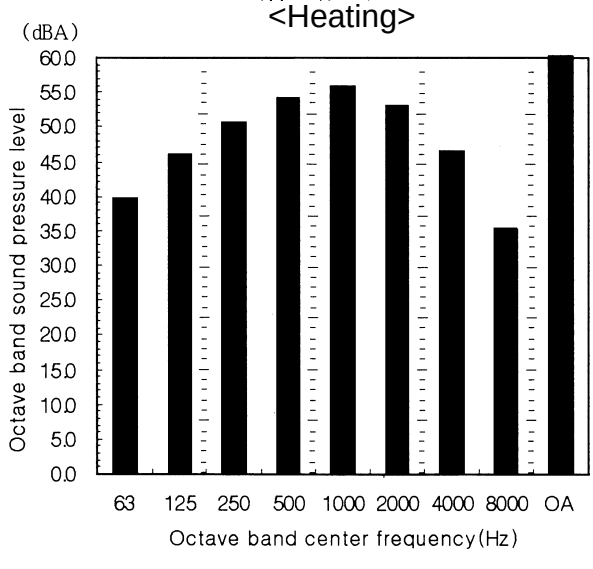

8 Inverter Model(Indoor Unit)

INV-9000BTU

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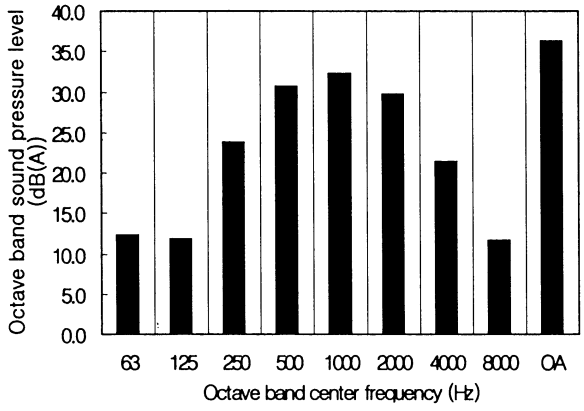

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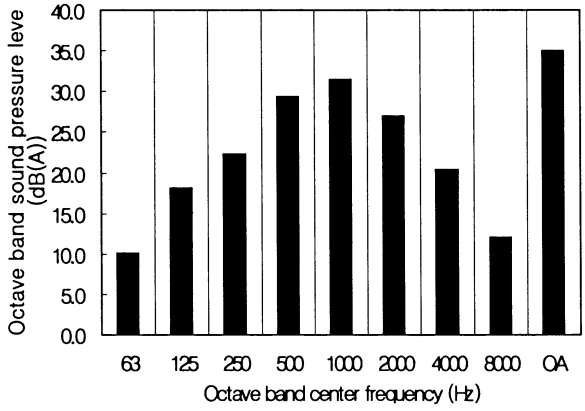

INV-12000BTU

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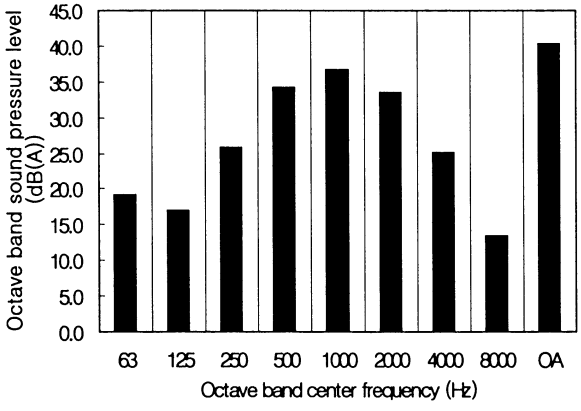

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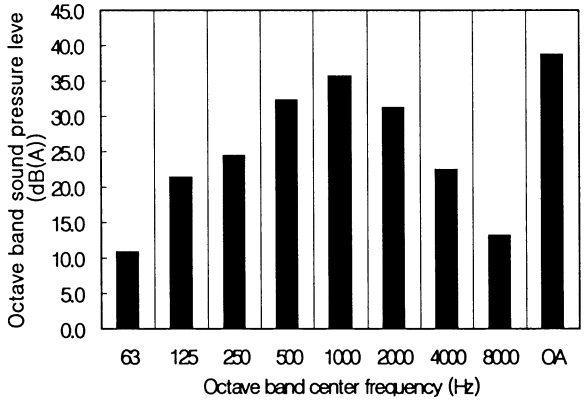

9 Inverter Model (Outdoor Unit)

INV - 9,000BTU

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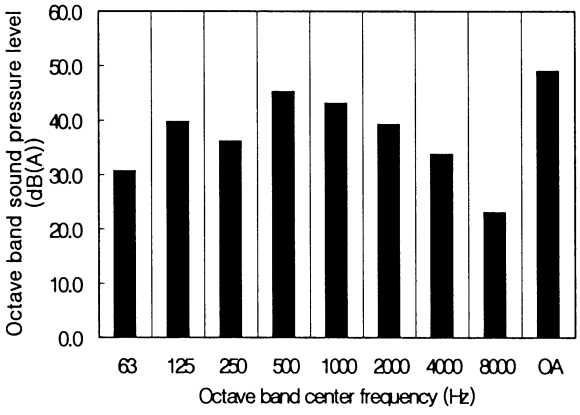

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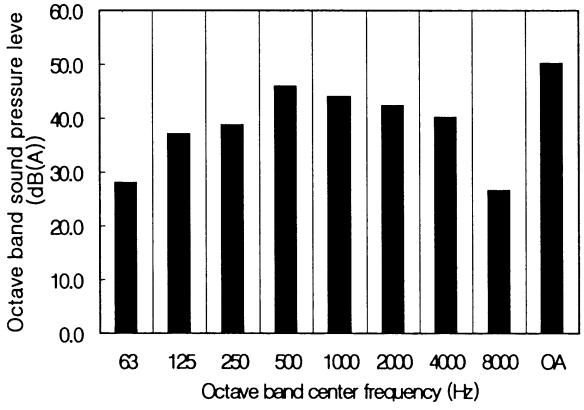

INV - 12,000BTU

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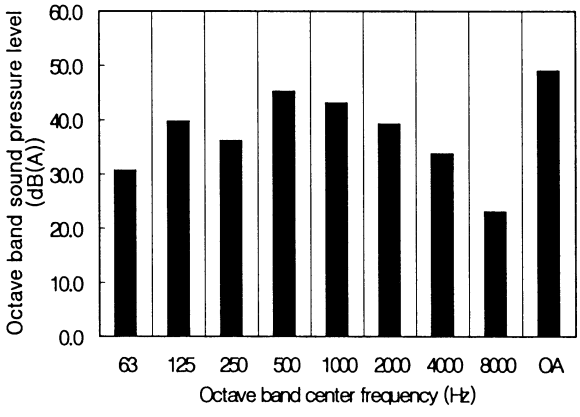

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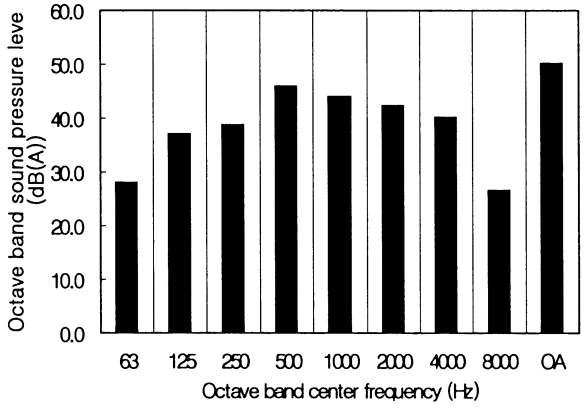

Installation

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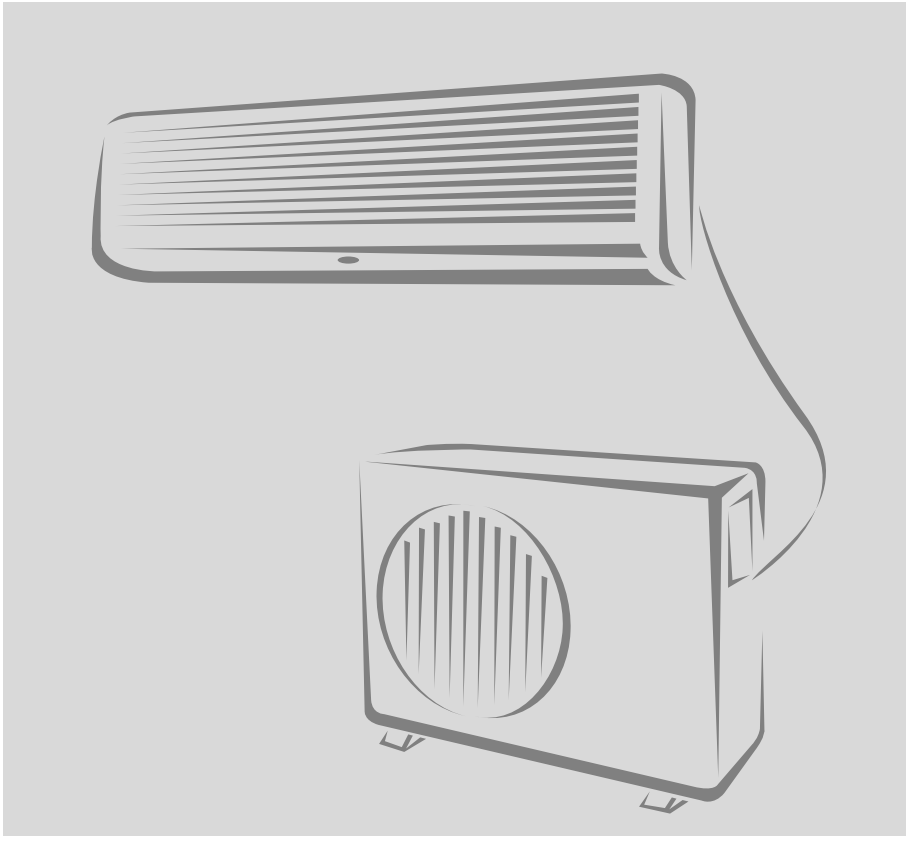


1 Selecting Area for Installation

Select an area for installation that is suitable to customer's needs.

1 Indoor Unit

1. Make sure that you install the indoor unit in an area providing good ventilation. It must not be blocked by an obstacle affecting the airflow near the air inlet and the air outlet.
2. Make sure that you install the indoor unit in an area allowing good air handling and endurance of vibration of the indoor unit.
3. Make sure that you install the indoor unit in an area where there is no source of heat or vapor nearby.
4. Make sure that you install the indoor unit in an area from which hot or cool air is spread evenly in a room.
5. Make sure that you install the indoor unit in an area away from TVs, audio units, cordless phones, fluorescent lighting fixtures and other electrical appliances (at least 1 meter).
6. Make sure that you install the indoor unit in an area which provides easy pipe connection with the outdoor unit, and easy drainage for condensed water.
7. Make sure that you install the indoor unit in an area which is large enough to accomodate the measurements shown in figure on the next page.

Caution :

It is harmful to the air conditioner if it is used in the following environments: greasy areas (including areas near machines), salty areas such as coast areas, areas where sulfuric gas is present such as hot spring areas. Contact your dealer for advice.

2 Outdoor Unit

1. Make sure that you install the outdoor unit in area not exposed to the rain or direct sun light.(Install a separate sunblind if exposed to direct sun light.)

2. Make sure that you install the outdoor unit in area allowing the good air moment, not amplifying noise or vibration, especially to avoid disturbing neighbours.
(Fix the unit firmly if it is mounted in a high place.)

3. Make sure that you install the outdoor unit in area providing the good ventilation and which is not dusty. It must not be blocked by any obstacle affecting the airflow near the air inlet and the air outlet.

4. Make sure that you install the outdoor unit in area free from animals or plants.

5. Make sure that you install the outdoor unit in area not blocking the traffic.

6. Make sure that you install the outdoor unit in area easy to drain condensed water from the indoor unit.

7. Make sure that you install the outdoor unit in area which provides easy connection within the maximum allowable length of a coolant pipe.

MODEL	The guantaty of Supplementary refrigerant
7K	20(g/m)
9K	20(g/m)
12K	30(g/m)
18K	30(g/m)
24K	40(g/m)

8. Make sure that you install the outdoor unit in an area which is large enough to accommodate the measurements shown in figure on the next page.

3 Remote Control Unit

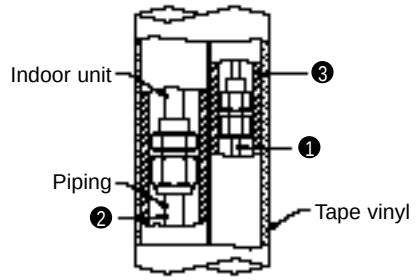
1. Make sure that you install the remote control unit in an area free from obstacles such as curtains etc, which may block signals from the remote control unit.

2. Make sure that you install the remote control unit in an area not exposed to direct sunlight, and where there is no source of heat.

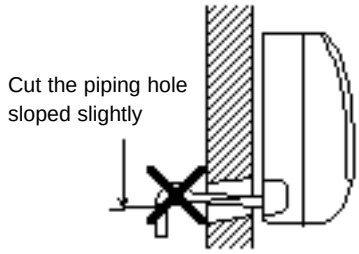
3. Make sure that you install the remote control unit in an area away from TVs, audio units, cordless phones, fluorescent lighting fixtures and other electrical appliances (at least 1 meter).

2 Installation Diagram of Indoor Unit and Outdoor Unit

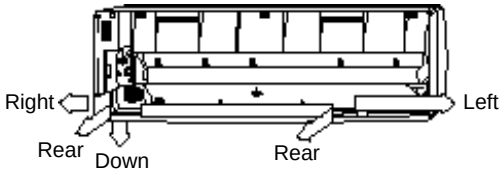
A Indoor unit gas leak test check point



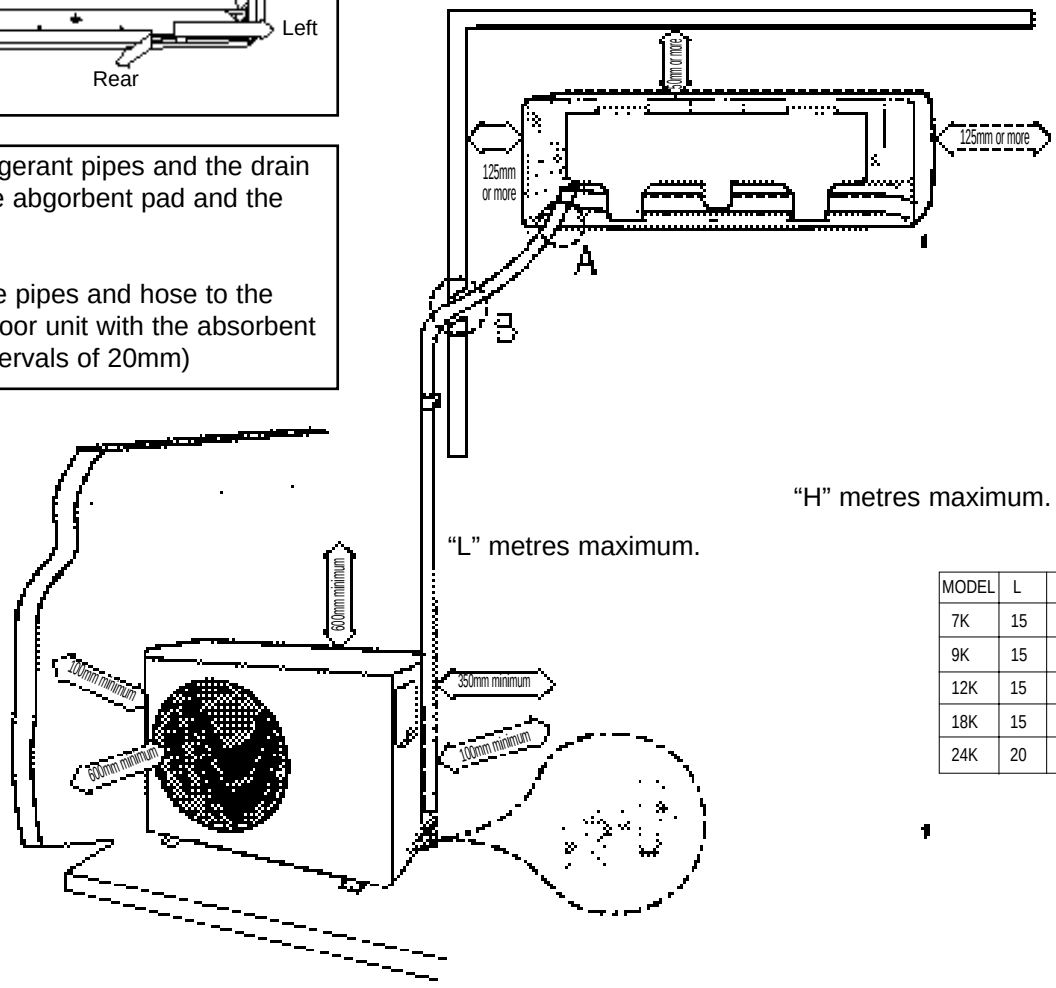
B Drain hose installation



Piping may be laid to the rear, left, right or down.



- Wrap the refrigerant pipes and the drain hose up in the abgorbent pad and the vinyl thape.
- Triply wind the pipes and hose to the end of the indoor unit with the absorbent pad (make intervals of 20mm)



"H" metres maximum.

"L" metres maximum.

MODEL	L	H
7K	15	7
9K	15	7
12K	15	7
18K	15	8
24K	20	8

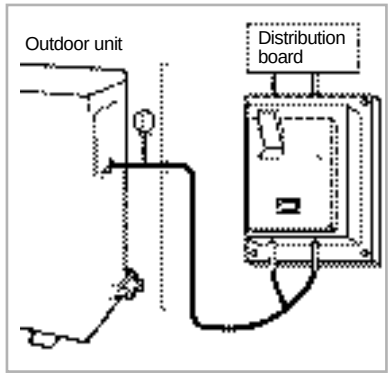
* The designs of the unit and Connectionvalue are subject to Change according to the model.

◆ Installing a Breaker (18K/24K Model)

You must install a breaker close to the indoor unit, to be used exclusively for the air conditioner. The following electrical characteristics must be respected.

Model		Power cable	Assembly cable
18K	US18✳✳ SC18ZA1X	3 Wire power cable (above 1.5mm²/area)	5(Cooling Only) or 7(Heat Pump) wire assembly Cable (above 0.75 mm²/area)
24K	UST18✳✳ UST24✳✳ SC18(24)TA1X	3 Wire power cable (above 2.5mm²/area)	

✳ Approyed according to IEC standard.



1 Connect the breaker to the main distribution board.

2 When installing the outdoor unit, connect the power cable from the outdoor unit to the breaker.

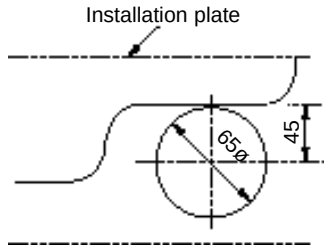
➢ The indoor unit is powered via the outdoor unit; for further details on how to connect the indoor unit assembly cable.

1 Fixing the Installation Plate

1. Determine the position of the pipe and drain hose hole refering to the right figure and drill the hole with an inner diameter of 65mm so that it slants slightly downwards.

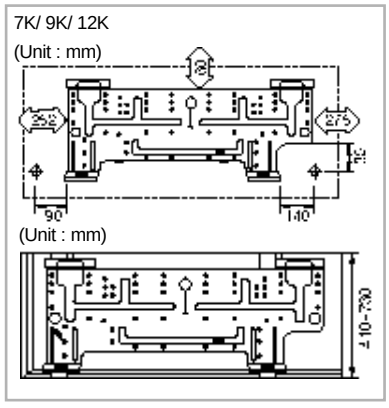
2. **If you are fixing the indoor unit to a… Then follow Steps…**

Wall	**3.**
Window frame	**4 to 6.**



3. Fix the installation plate to the wall in a manner appropriate to the weight of the indoor unit.

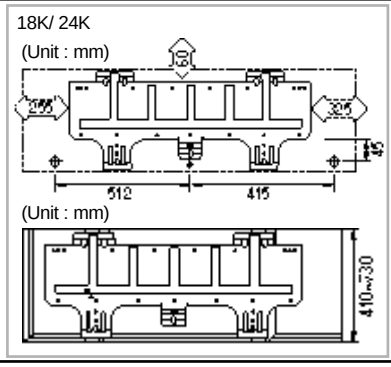
If you are mounting the plate on a concrete wall with anchor bolts, anchor bolts must not be projected by more than 20mm.



4. Determine the position of the wooden uprights to be attached to the window frame.

5. Attach the wooden upright to the window frame in a manner appropriate to the weight of the indoor unit.

6. Using tapped screws, attach the installation plate to the wooden upright, as illustrated in the last figure opposite.



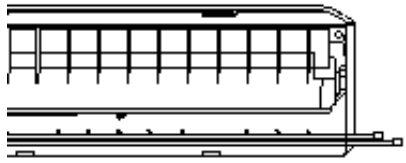
2 Purging the Unit

On delivery, the indoor unit is loaded with an inert gas. All this gas must therefore be purged before connecting the assembly piping. To purge the inert gas, proceed as follows.

Unscrew the cap at the end of each pipe.

Result *All inert gas escapes from the indoor unit.*

◆ To prevent dirt or foreign objects from getting into the pipes during installation, do NOT remove caps completely until you are ready to connect the piping.

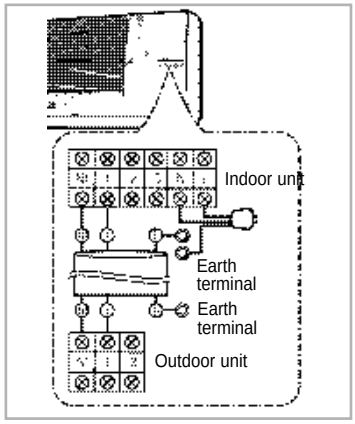


3 Connecting the Assembly Cable(Cooling Only)

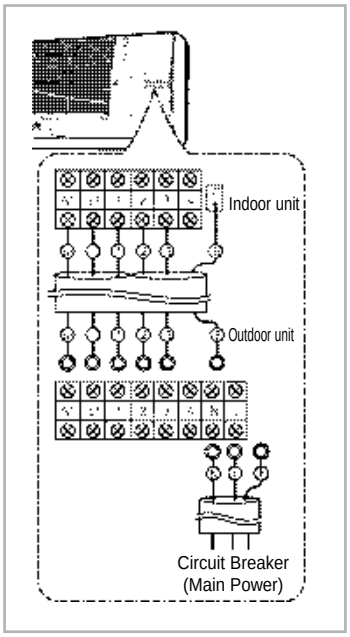
The outdoor unit is powered from the indoor unit via the assembly cable. (7K / 9K / 12K)
The indoor unit is powered from the outdoor unit via the assembly cable. (18K / 24K) If the outdoor unit is more than five metres away from the indoor unit, the cable must first be extended to a maximum.

1. Extend the assembly cable if necessary.
2. Open the front grille by pulling on the tab on the lower right and left sides of the indoor unit.
3. Remove the screw securing the connector cover.
4. Pass the assembly cable through the rear of the indoor unit and connect the assembly cable to terminals.
   ◆ Each wire is labelled with the corresponding terminal number.
5. Firmly fix the ass'y cable with clamp wire holder.
6. Pass the other end of the cable through the 65mm hole in the wall.
7. Replace the connector cover, carefully tightening the screw.
8. Close the front grille.
9. For further details on how to plug the other end of the assembly cable into the outdoor unit.

7K/ 9K/ 12K



18K/ 24K



4 Connecting the Assembly Cable(Heat Pump)

The outdoor unit is powered from the indoor unit via the assembly cable. (7K / 9K / 12K)
The indoor unit is powered from the outdoor unit via the assembly cable. (18K / 24K) If the outdoor unit is more than five metres away from the indoor unit, the cable must first be extended to a maximum.

1 Extend the assembly cable if necessary.

2 Open the front grille by pulling on the tabs on the lower right and left sides of the indoor unit.

3 Remove the screw securing the connector cover.

4 Pass the assembly cable through the rear of the indoor unit and connect the assembly cable to terminals

➢ Each wire is labelled with the corresponding terminal number.

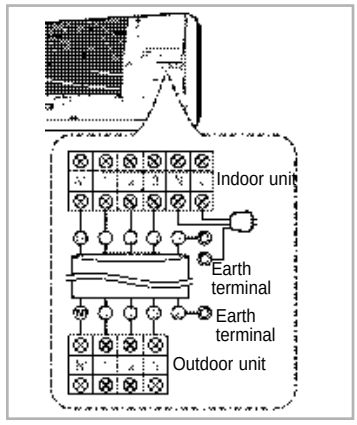
5 Pass the other end of the cable through the 65 mm hole in the wall.

6 Replace the connector cover, carefully tightening the screw.

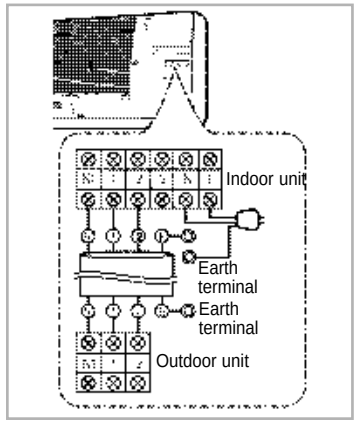
7 Close the front grille.

8 For further details on how to plug the other end of the assembly cable into the outdoor unit.

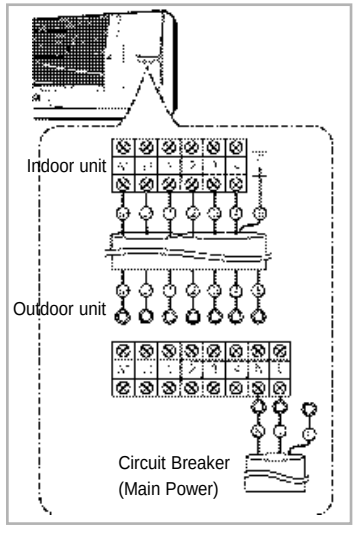
7K/ 9K/ 12K



9K/ 12K(Inverter)



18K/ 24K

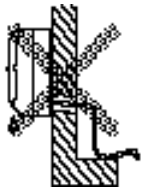


5 Installing and Connecting the Indoor Unit Drain Hose

Care must be taken when installing the drain hose for the indoor unit to ensure that any condensed water is correctly drained outside. When passing the drain hose through the 65mm hole drilled in the wall, check that none of the following situation occur.

The hose must NOT slope upwards.

The end of the drain hose must NOT be placed in water.



Do NOT bend the hose in different directions.

Keep a clearance of at least 5cm between the end of the hose and the ground.

Do NOT place the end of the drain hose in a hollow.

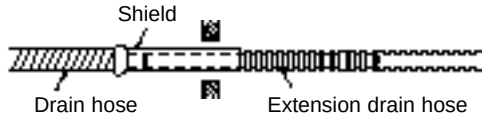
To install the drain hose, proceed as follows

1. If necessary, connect the 2-meter extension to the drain hose.

2. If you are using the extension, insulate the inside part of the extension drain hose with a shield.

3. Pass the drain hose under the refrigerant piping, taking care to keep the drain hose tight.

4. Pass the drain hose through the hole in the wall, making sure that it is sloping downwards, as shown in the illustrations above.



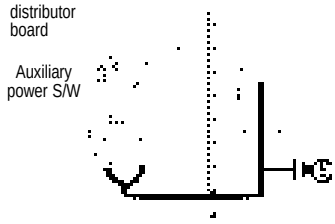
The hose will be fixed permanently into position once the whole installation has been tested for gas leaks; refer to page 33 for further details.

6 Outdoor Unit Installation

COOLING ONLY (18K/ 24K)

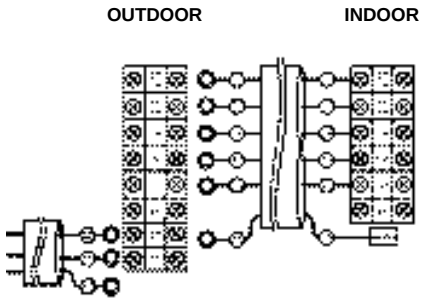
Auxiliary Power S/W

Auxiliary power S/W should be installed near indoor unit so that each access is possible.Main/Outdoor unit power cords are connected to upper/lower terminal of auxiliary power S/W.



Wiring Connection

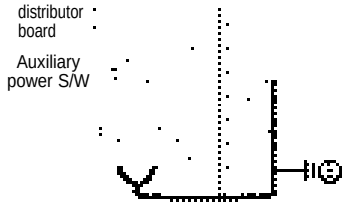
Indoor unit connector wire should be connected to both indoor unit connector and outdoor unit terminal board as shown in the figure.



HEAT PUMP (18K/ 24K)

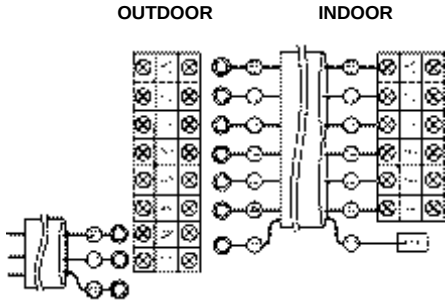
Auxiliary Power S/W

Auxiliary power S/W should be installed near indoor unit so that each access is possible.Main/Outdoor unit power cords are connected to upper/lower terminal of auxiliary power S/W.



Wiring Connection

Indoor unit connector wire should be connected to both indoor unit connector and outdoor unit terminal board as shown in the figure.

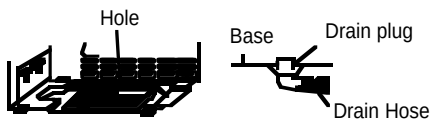


Installation of Drain Line

In heating and deice operation, condensed water may be generated.

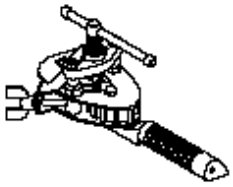
Install drain line as following procedure.

1. Insert the drain plug into base hole.
2. And then connect drain hose to drain plug.

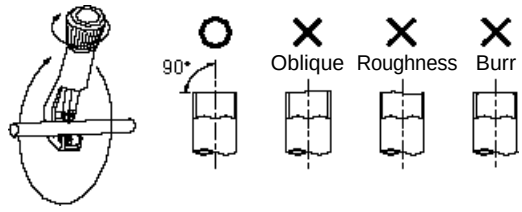
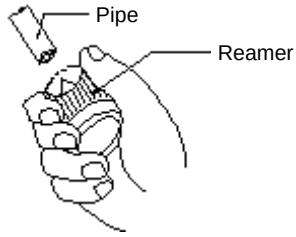


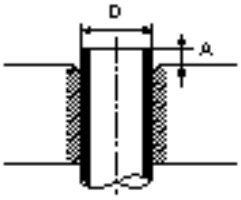
7 Flare Modification

TOOLS USED



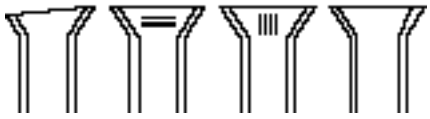
FLARE MODIFICATION PROCEDURE

1. Cut the pipe using a pipe cutter.	
2. Remove burrs at the tip of the pipe cut. Caution *Burrs not removed may result in leakage of gas.*	
3. Insert a flare nut into the pipe and modify flare.	



Outer diameter	A(mm)
ø6.35mm	1.3
ø9.52mm	1.8
ø12.7mm	2.0
ø15.8mm	2.2

* Unproper flaring



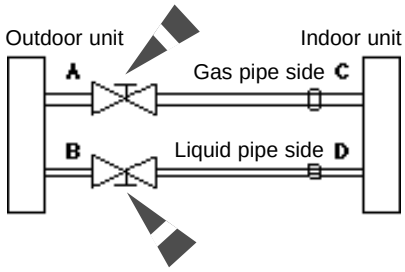
8 Air-Purge Procedure

The outdoor unit is loaded with sufficient R-22 refrigerant for 5 metres of piping. The air in the indoor unit and in the pipe must be purged. If air remains in the refrigeration pipes, it will affect the compressor, reduce to cooling / heating capacity and could lead to a malfuction. Refrigerant for air purging is not charged in the outdoor unit. Use Vacuum Pump as shown at the figure.

1. Connect each assembly pipe to the appropriate valve on the outdoor unit and tighten the flare nut.

2. Referring to the illustration opposite, tighten the flare nut first manually and then with a wrench, applying the following torque.

Pipe	Outer Diameter	Torque(kg·cm)
Liquid refrigerant	6.35mm	160
Gas refrigerant	12.70mm	500
Gas refrigerant	15.88mm	700



3. Connect the charging hose of low pressure side of manifold gauge to the packed valve having a service port as shown at the figure.

4. Open the valve of the low pressure side of manifold gauge counterclockwise.

5. Purge the air from the system using vacuum pump for about 10 minutes.

- ◆ Close the valve of the low pressure side of manifold gauge clockwise.
- ◆ Make sure that pressure gauge show -0.1MPa(-76cmHg) after about 10minutes.
  This procedure is very important in order to avoid gas leak.
- ◆ Turn off the vacuum pump
- ◆ Remove the hose of the low pressure side of manifold gauge.

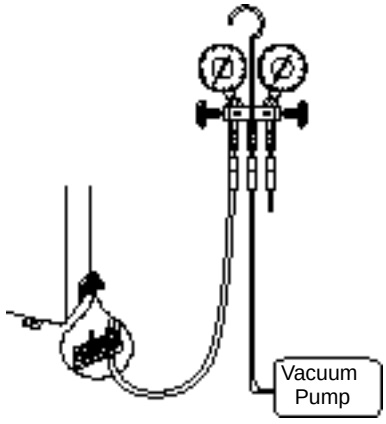
Adding Refrigerant

Refrigerant must be added if the piping measures more than 5 metres in length. This operation can only be performed by a qualified refrigeration specialist.

☛	If you have used...	Then...
	More than 5 metres of piping	"A" of refrigerant (R-22) must be added for each extra metre.
	Less than 5 metres of piping	The purge time is normal.

Refer to the Service Manual for more details on this operation.

* The designs and shape are subject to change according to the model.



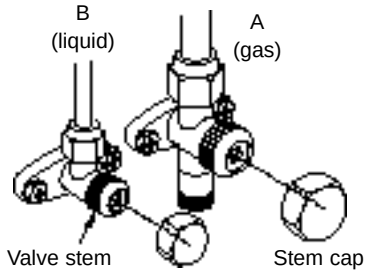
MODEL	A
7K	20g
9K	20g
12K	30g
18K	30g
24K	40g

6. Set valve cork of both liquid side and gas side of packed valve to the open position.

7. Mount the valve stem nuts and the service port cap to the valve, and tighten them at the torque of 18N·m with a torque wrench.

8. Check for gas leakage.

◆ At this time, especially check for gas leakage from 3-way valve's stem nuts, and from the service port cap.



9 Refrigerant Refill

Refill an air-conditioner with refrigerant when refrigerant has been leaked at installing or using.

1. Purge air(for new installation only).

2. Turn the 3-way valve clockwise to close, connect the pressure gauge (low pressure side) to the service valve, and open the 3-way valve again.

3. Connect the tank to refill with refrigerant

4. Set the unit to cool operation mode.

5. Check the pressure indicated by the pressure gauge(low pressure side).

✵ *Standard pressure is should be 4.5~5.5kg/cm² in a regular, high operation mode.*

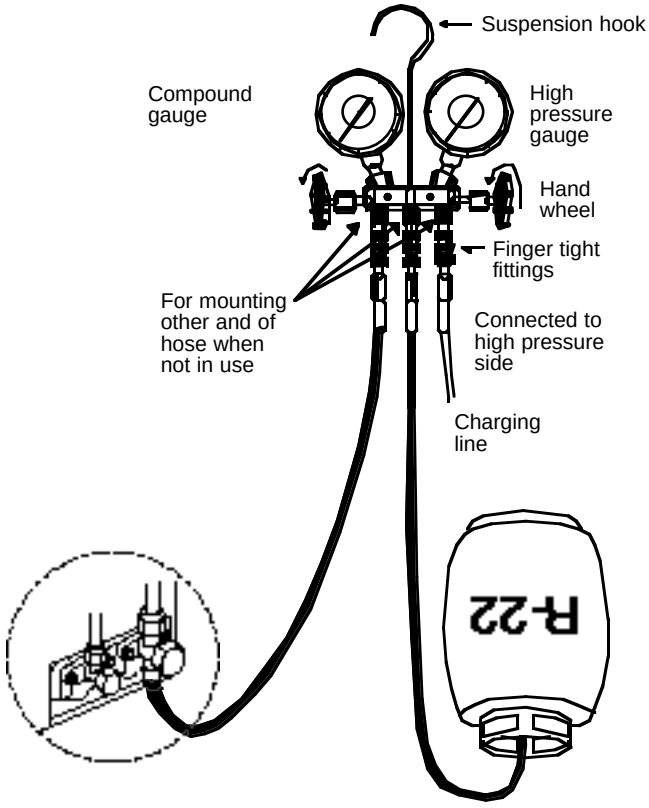
6. Open the refrigerant tank and fill with refrigerant until the rated pressure is reached.

✵ *It is recommended not to pour the refrigerant in too quickly, but gradually while operating a pressure valve.*

7. Stop operation of the air conditioner.

8. Close the 3-way valve, disconnect the pressure gauge, and open the 3-way valve again.

9. Close the cap of each valve.



10 Refrigerant Adjustment

Class	At installation		At service	
Connection Pipe Length	Air-Purge Method	Refrigerant Adjustment	Air-Purge Method	Refrigerant Quantity
Standard 5m	Refer to the detailed Air-Purge Procedure	Unnecessary	Purge air using a vacuum pump or an additional refrigerant cylinder.	refer to specification sheet
Max. ~15m (24K : 20m)		Add “A” of refrigerant (R-22) for every 1m.		Add “A” of refrigerant (R-22) for every 1m.

It would be the best choice to use the standard tube length to keep the basic quality of Room Air conditioner, for example cooling and heating capacity, sound level, vibration level, and reliability.
But, according to a certain different installation condition, the connection tube length could be changed in the recommendation length that is shown above.
In this case, installer should keep the installation condition to keep the quality of Room Air conditioner.

MODEL	“A”	“B”
7K/ 9K	20(g/m)	7
12K/	30(g/m)	7
18K	30(g/m)	8
24K	40(g/m)	8

✵ *Refrigerant should be charged additionally as written above according to the change of the length of the connection tube. It needs to affect the decrease in cooling and heating capacity or of the reliability of compressor that may be caused by a lack of refrigerant.*

✵ *Installation position difference between the indoor unit and the outdoor unit should not exceed over than “B” meters.*

✵ *When the connection pipe is been extended longer than 5 meters, it might need to change the diameter of the electrical wire to a larger size in order to keep a voltage drop for starting room air conditioner is not less than 85% of the rated voltage. And then, a voltage meter will be useful to check the rate of the voltage drop.*

11 Flare Nut Fixing Torque

Outer diameter	Torque (kg-cm)	
	Fixing Torque	Final Torque
ø 6.35 mm (Liquid Side)	160	200
ø 9.52 mm (Gas Side)	300	350
ø 12.7 mm (Gas Side)	500	550
ø 15.8 mm (Gas Side)	700	750

12 "Pump down" Procedure

Pump down will be carried out when an evaporator is replaced or when the unit is relocated in another area.

1. Remove the caps from the 2-way valve and the 3-way valve.

2. Turn the 3-way valve clockwise to close and connect a pressure gauge (low pressure side) to the service valve, and open the 3-way valve again.

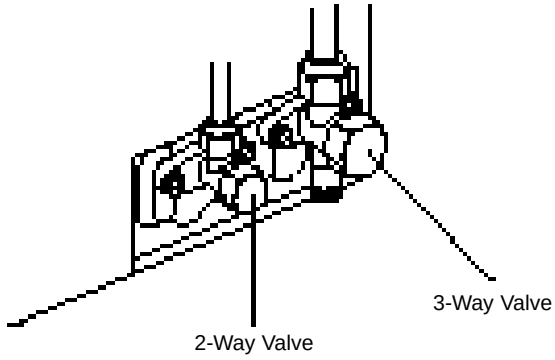
3. Set the unit to cool operation mode. (Check if the compressor is operating.)

4. Turn the 2-way valve clockwise to close.

5. When the pressure gauge indicates "0" turn the 3-way valve clockwise to close.

6. Stop operation of the air conditioner.

7. Close the cap of each valve.



Relocation of the air conditioner

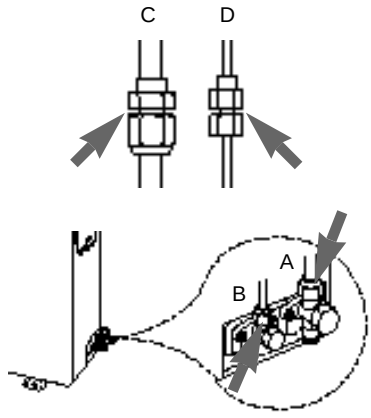
Refer to this procedure when the unit is relocated.

1. Carry out the pump down procedure (refer to the details of 'pump down').
2. Remove the power cord.
3. Disconnect the assembly cable from the indoor and outdoor units.
4. Remove the flare nut connecting the indoor unit and the pipe.
   At this time, cover the pipe of the indoor unit and the other pipe using a cap or vinyl plug to avoid foreign material entering.
5. Disconnect the pipe connected to the outdoor unit.
   At this time, cover the valve of the outdoor unit and the other pipe using a cap or vinyl plug to avoid foreign material entering.
6. Make sure you do not bend the connection pipes in the middle and store together with the cables.
7. Move the indoor and outdoor units to a new location.
8. Remove the mounting plate for the indoor unit and move it to a new location.

3 Performing Leak Tests

Before completing the installation (insulation of the cable, hose and piping and fixing of the indoor unit to the installation plate), you must check that there are no gas leaks.

To check for gas leaks on the...	**Then, using a leak detector, check the...**
Indoor unit	Flare nuts at the end of sections C and D.
Outdoor unit	Valves on sections A and B.



4 Placing the Indoor Unit in Position

Once you have checked that there are no leaks in the system, you can insulate the piping, hose and cables and place the indoor unit on the installation plate.

1. To avoid condensation problems, place heat-resistant polyethylene foam separately around each refrigerant pipe in the lower part of the indoor unit.

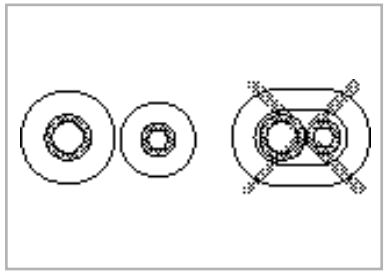
2. Wind insulating tape around the pipe, assembly cable and drain hose.

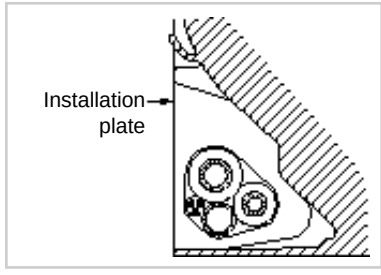
3. Place the resulting bundle carefully in the lower part of the indoor unit, making sure that it does not jut out from the rear of the indoor unit.

4. Hook the indoor unit up to the installation plate and move the unit to the right and left until you are sure that it is securely to place in.

5. Finish wrapping insulating tape around the rest of the piping leading to the outdoor unit.

6. Using clamps (optionally supplied), attach the piping to the wall wherever possible.





5 Checking and Testing Operations

To complete the installation, perform the following checks and tests to ensure that the air conditioner is operating correctly.

1 Review all the following elements in the installation:

- Installation site strength
- Piping connection tightness to detect any gas leakages
- Connection wiring
- Heat-resistant insulation of the piping
- Drainage
- Earthing wire connection
- Correct operations (follow the steps below)

2 Press the On/Off button.

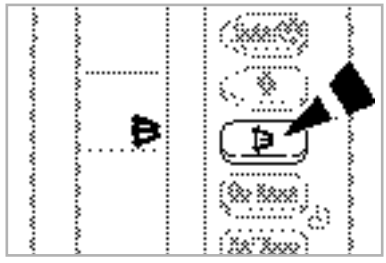
Result
- *The indicator lights on the indoor unit flash at half-second intervals.*
- *While the indoor unit opens, the indoor unit fan runs to start.*

3 Press the button.

Result
- *The outdoor unit operates in cooling or heating mode as following the room temperature.*

4 Air flow direction

- Press the button and check that the air flow blades work properly.



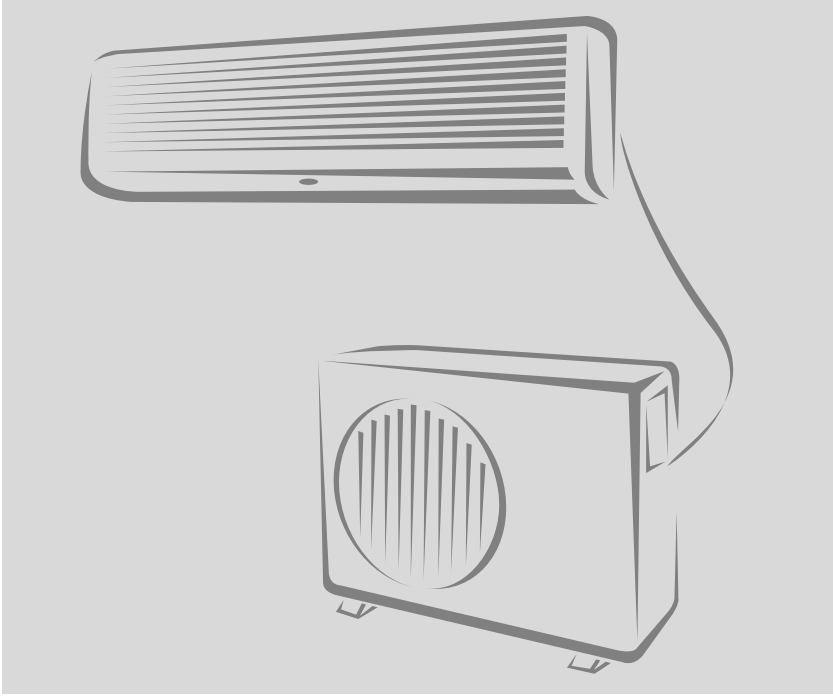
Features & Operation

Name & Function of Key in Remote Controller 55

Operating Recommendations 60

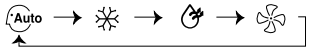
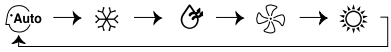
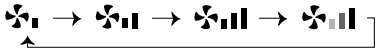
Temperature and Humidity Ranges 61

Operation Characteristics 62



1 Name & Function of Key in remote controller

1 Name & Function of Key in Remote Controller

NO	NAMED OF KEY	FUNCTION OF KEY
1		Power On/Off button to start and stop airconditioner or timer set up
2	(UP)	Temp. up button. To increase the temperatute by the pressing the temperature button
	(DOWN)	Temp. down button. To decrease the temperature by the pressing the temperature button
3		Each time you press this button Mode is changed in the following order *In case of Cooling Only model.  *In case of Heat pump model.  : Auto Mode : Fan Only : Cool Mode : Heat Mode : Dry Mode
4		Press TURBO until the appearance. the air condition cools or heats the room as quickly as possible. after 30minutes, the air, the airconditioner is reset automatically to the previous mode
		Press until the appearance. the sleep timer can be used when you are cooling or heating your room to switch the air conditioner off automatically after a perriod of six hours.
5		Each time you press this button, FAN SPEED is changed in the following order. 
6		Adjust air flow vertically.
7		The ON Timer enables you to **switch on** the air conditioner automatically after a given period of time that is from 30 minutes to 24 hours. To cancel the On Time, press the (Set/Cancel) button.
8		The Off Timer enables you to **switch off** the air conditioner automatically after a given period of time that is from 30 minutes to 24 hours. To cancel the On Time, press the (Set/Cancel) button.
9		To select the 5 way function with the remote control, press the 5 way button one or more times until the desired mode is selected.. Each time you press the 5 way button Each 5 way indicator on the indoor unit comes on in or der.

COOLING ONLY

1. AUTO MODE : In this mode, operation mode(COOL) is selected automatically by the room temperature of initial operation.

Operation Type
Cool Operation (Set Temp:AUTO SETTING)

ΔT= -1°C, -2°C, 0°C+1°C+2°C
ΔT is controlled by setting temperature up/down key of remote controller

2. COOL MODE : The unit operates according to the difference between the setting and room temperature. (18°C~30°C)

3. DRY MODE : Has 3 states, each determined by room temperature.
The unit operates in DRY mode.
*Compressor ON/OFF Time is controlled compulsorily(can not set up the fan speed, always breeze).
*Protective function : Low temperature release. (Prevention against freeze)

4. TURBO MODE : This mode is available in AUTO, COOL, DRY, FAN MODE.
When this button is pressed at first, the air conditioner is operated "powerful" state for 30 minutes regardless of the set temperature, room temperature.
When this button is pressed again, or when the operating time is 30 minutes, turbo operation mode is canceled and returned to the previous mode.
*But, if you press the TURBO button in DRY or FAN mode that is changed with AUTO mode automatically.

5. SLEEP MODE : Sleep mode is available only in COOL mode.
The operation will stop after 6 hours.
*In COOL mode : The setting temperature is automatically raised by 1°C each 1hour When the temperature has been raised by total of 2°C, that temperature is maintained.

7. FAN SPEED : Manual (3 step), Auto (4 step)
Fan speed automatically varies depending on both the difference between setting and the room temperature.

8. COMPULSORY OPERATION :
You can select the 5 Way function with operating mode of the air conditioner for more comfortable circumstances. You can use the 5 Way function with the indoor unit as well as the remote control. Thus, you can use this function even though you have lost your remote control.

Using with the indoor unit

◆ Press the ⏻ (ON/OFF)button one or more times until the desired mode is selected.

To obtain a(n)...	Then select...
Normal operating	(STANDARD)mode
Reducing the uncomfortable temperature swing	(NATURE)mode
Stronger air-conditioner environment faster	(QUENCHING)mode
Energy saving	(SAVING)mode
Quiet environment	(SILENT)mode

◆ To stop the operating, press the ⏻(ON/OFF) button until all indicators turn off.

Note - Even if the air conditioner has been turned on via the ON/OFF button, operations can still be controlled using the remote control as usual.

9. SWING : BLADE-H is rotated vertically by the stepping motor.
   *Memory louver : When ON/OFF button is pressed at stop state, the BLADE-H returns to its original location which is operating state before stop
   *Swing Set : Press the button under the remote control is displayed on LCD the and the blades move up and down. If the one more time press the button, blatles location is stop.

10. 24-Hour ON/OFF Real Setting Timer. : The air conditioner is turned ON at a specified time using (On Timer) .
    OFF TIMER : The air Conditioner is turned OFF at a specified time using (Off Timer) .
    *ON TIMER : Only timer LED lights on.
    *OFF TIMER : Both timer and operation LED lights on.

11. SELF Diagnosis

Check Point	LED DISPLAY					
	TIMER	STD	NATURE	POWER	SAVING	SILENCE
Indoor unit room temperture sensor error(open or short)	◑	○	○	○	○	○
Indoor unit heat exchanger tempertute sensor error(open or short)	◑	◑	○	○	○	○
Indoor fan mal function	○	○	◑	○	○	○
EEPROM error	◑	◑	◑	○	○	○
Option error(option wasn't set up or option data error)	◑	◑	◑	◑	◑	◑

◑ : LED blinking ○ : LED off

12. BUZZER SOUND : Whenever the ON/OFF button is pressed or whenever change occurs to the condition which is set up or select, the compulsory operation mode, buzzer is sounded "beep"

HEAT PUMP

1. AUTO MODE : In this mode, operation mode(COOL, HEAT) is selected automatically by the room temperature of initial operation.

Operation Type
Cool Operation (Set Temp:AUTO SETTING)
Heat Operation (Set Temp : 22°C+ΔT)

ΔT= -1°C, -2°C, 0°C+1°C+2°C
ΔT is controlled by setting temperature up/down key of remote controller

2. COOL MODE : The unit operates according to the difference between the setting and room temperature. (18°C~30°C)

3. HEAT MODE : The unit operates according to the difference between the setting and room temperature.(16°C~30°C)
*Prevention against cold wind : For about 3~5 minutes after initial operation, thermo control or "de-ice", the indoor fan will either not operate or operate very slowly, then switch to the selected fan speed. This period is to allow the indoor unit's heat-exchanger to prewarm before emitting warm air.
*High temperature release function : The outdoor unit for and compressor ON/OFF control for safety operation, when the over-heat is heat exchanger of indoor unit.
*De-ice : Deicing operation is controlled by indoor unit's heat exchanger temperature and accumulating time of compressor's operation.
De-ice end by sensing of the processing time by de-ice Condition.

4. DRY MODE : Has 3 states, each determined by room temperature.
The unit operates in DRY mode.
*Compressor ON/OFF Time is controlled compulsorily(can not set up the fan speed, always breeze).
*Protective function : Low temperature release. (Prevention against freeze)

5. TURBO MODE : This mode is available in AUTO, COOL, HEAT, DRY, FAN MODE.
When this button is pressed at first, the air conditioner is operated "powerful" state for 30 minutes regardless of the set temperature, room temperature.
When this button is pressed again, or when the operating time is 30 minutes, turbo operation mode is canceled and returned to the previous mode.
*But, if you press the TURBO button in DRY or FAN mode that is changed with AUTO mode automatically.

6. SLEEP MODE : Sleep mode is available only in COOL or HEAT mode.
The operation will stop after 6 hours.
*In COOL mode : The setting temperature is automatically raised by 1°C each 1hour When the temperature has been raised by total of 2°C, that temperature is maintained.
*In HEAT mode : The setting temperature is automatically droped by 1°C each 1hour. When the temperature has been droped by total of 2°C, that temperature is maintained.

7. FAN SPEED : Manual (3 step), Auto (4 step) Fan speed automatically varies depending on both the difference between setting and the room temperature.

8. COMPULSORY OPERATION :
You can select the 5 Way function with operating mode of the air conditioner for more comfortable circumstances. You can use the 5 Way function with the indoor unit as well as the remote control. Thus, you can use this function even though you have lost your remote control.

Using with the indoor unit

◆ Press the ⏻ (ON/OFF)button one or more times until the desired mode is selected.

To obtain a(n)...	Then select...
Normal operating	(STANDARD)mode
Reducing the uncomfortable temperature swing	(NATURE)mode
Stronger air-conditioner environment faster	(QUENCHING)mode
Energy saving	(SAVING)mode
Quiet environment	(SILENT)mode

◆ To stop the operating, press the ⏻ (ON/OFF) button until all indicators turn off.

Note - Even if the air conditioner has been turned on via the ON/OFF button, operations can still be controlled using the remote control as usual.

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Indoor unit heat exchanger tempertute sensor error(open or short)	◑	◑	○	○	○	○
Indoor fan mal function	○	○	◑	○	○	○
EEPROM error	◑	◑	◑	○	○	○
Option error(option wasn't set up or option data error)	◑	◑	◑	◑	◑	◑

◑ : LED blinking ○ : LED off

12. BUZZER SOUND : Whenever the ON/OFF button is pressed or whenever change occurs to the condition which is set up or select, the compulsory operation mode, buzzer is sounded "beep"

2 Operating Recommendations

Here are a few recommendations that you should follow when using your air conditioner.

Topic	Recommendation
Heating performances	The heat pump absorbs heat from outside air and brings it indoors. If the temperature of the outside air drops, the air conditioner will heat less. If you find that the room is not warm enough, use an additional heating appliance.
Warm air circulation	The air conditioner circulates warm air to heat your room; as a result, some time will be required after starting the air conditioner to warm the entire room. If necessary, set the air conditioner going a short time before you wish to use the room.
Frost	When outside temperatures are low and humidity is high, frost may form in the outdoor unit when heating with your air conditioner. If this happens: ◆ The heating operation is stopped. ◆ The Deice mode is triggered automatically for about seven minutes ◆ The OPERATION indicator on the indoor unit lights up red. No intervention is required from you; after about seven minutes, the air conditioner starts operating again normally.
High indoor and outdoor temperatures	If both the indoor and outdoor temperatures are high and you select the Heat mode, the outdoor unit's fan and compressor may stop at times. This is normal; simply wait until the air conditioner switches on again.
Power failure	If a power failure occurs when the air conditioner is operating, the unit is switched off. When the power returns, you must press ⏻ (On/Off) to restart it.

3 Temperature and Humidity Ranges

The following table indicates the temperature and humidity ranges within which the air conditioner can be used.

If the air conditioner is used at...	Then...
High temperatures	The automatic protection feature may be triggered and the air conditioner stopped.
Low temperatures	A water leakage or some other malfunction may happen if the heat exchanger freezes.
High humidity levels	Water may condense on and drip from the surface of the indoor unit if it is used for long periods.

Mode	Outdoor Temperature	Indoor Temperature	Indoor Humidity
Heating	0°C to 24°C approx.	27°C or less	-
Cooling	21°C to 43°C approx.	18°C to 32°C approx.	80% or less
Drying	18°C to 43°C approx.	18°C to 32°C approx.	-

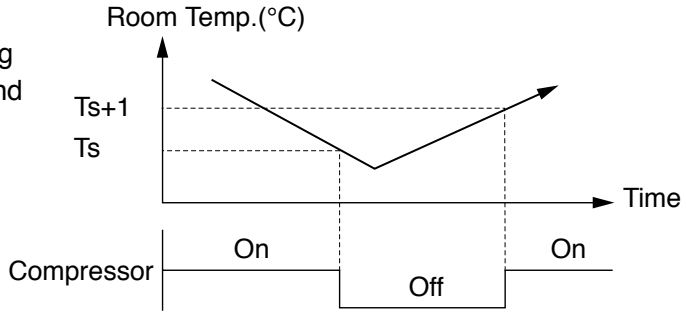
❋ **If the heating operation is used at below 0°C(outdoor temperature) then, does not a full capacity.**
If the cooling operation is used at over 33°C(indoor temperature) then, does not a full capacity.

4 Operation Characteristics

4-1 NON INVERTER

1 Cooling Mode Operation

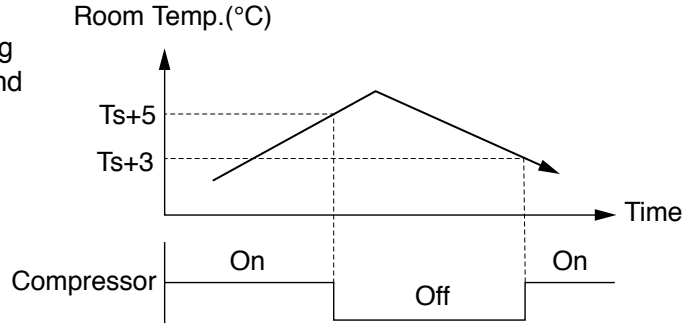
When selecting the Cooling Mode Operation, the unit will operate according to the setting by the remote controller and the operation is as well as the following. Room temperature can be set in 1°C steps in the range of 18 to 30°C.



♦ Ts means Remote Controller setting Temperature

2 Heating Mode Operation

When selecting the Heating Mode Operation, the unit will operate according to the setting by the remote controller and the operation is as well as the following. Room temperature can be set in 1°C steps in the range of 16 to 30°C.



3 Automatic Operation

When Automatic operation is set by the remote controller, the air conditioner senses the room temperature then automatically selects the operation mode and setting temperature.

	Operating Mode	Setting Temp.	Remarks
Room Temp ≥ 21°C + ΔT	Cooling	Tsp = 24°C + ΔT	ΔT = -2, -1, 0, 1, 2
Room Temp < 21°C + ΔT	Heating	Tsp = 22°C + ΔT	

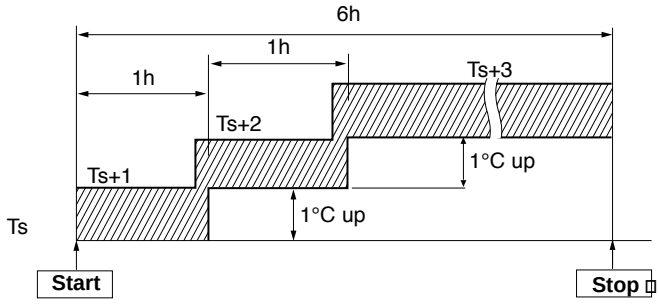
◆ In case that Room Temp. ≥ 21°C + ΔT, The Unit is operated in the Cool Mode.
◆ In case that Room Temp. < 21°C + ΔT, The Unit is operated in the Heat Mode.
◆ ΔT means that user is able to change setting temperature within ±2°C.

4 Sleeping Operation

AT COOLING MODE

When you set the sleep mode, the following movement will start to avoid overcooling.

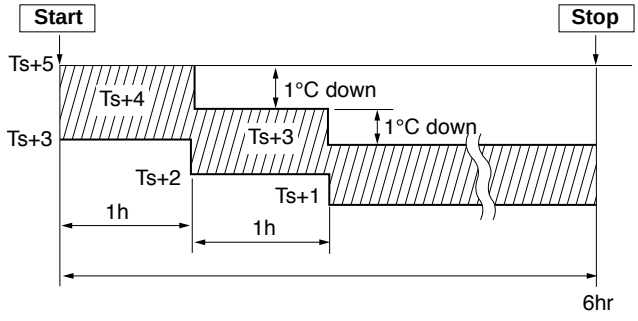
- ◆ The indoor fan speed is fixed by setting the remote controller.
- ◆ The setting temperature will rise by 1°C at the starting of operation and by 1°C one hour later.
- ◆ The operation will stop after 6 hours.



AT HEATING MODE

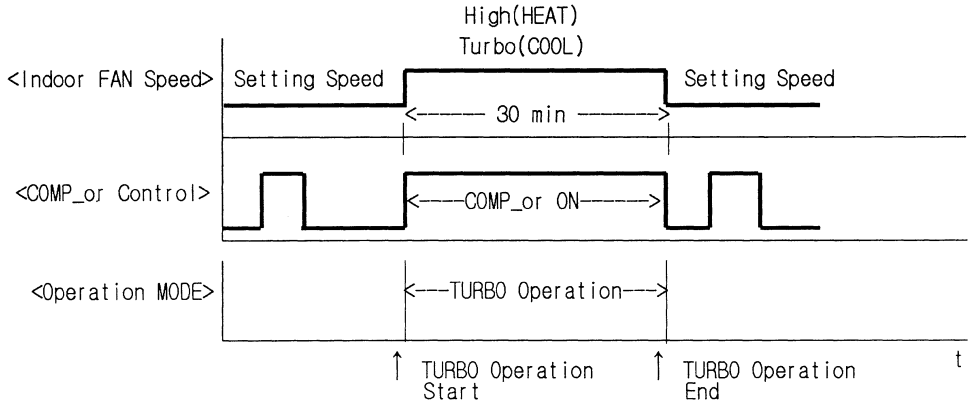
When you set the sleep mode, the following movement will start to avoid overheating.

- ◆ The indoor fan speed is fixed by setting the remote controller.
- ◆ The setting temperature will be dropped by 1°C at the starting of operation and by 1°C one hour later.
- ◆ The operation will stop after 6 hours.



5 Turbo Operation(Cooling or Heating Mode)

If turbo operation is selected during heating or cooling mode, compressor is operated for 30minutes regardless of room temperature. After 30minutes of turbo operation unit will operate in normal state



6 Indoor fan control in the heating mode

Indoor fan is controlled depending on the temperature of indoor heat exchanger in the heating mode.

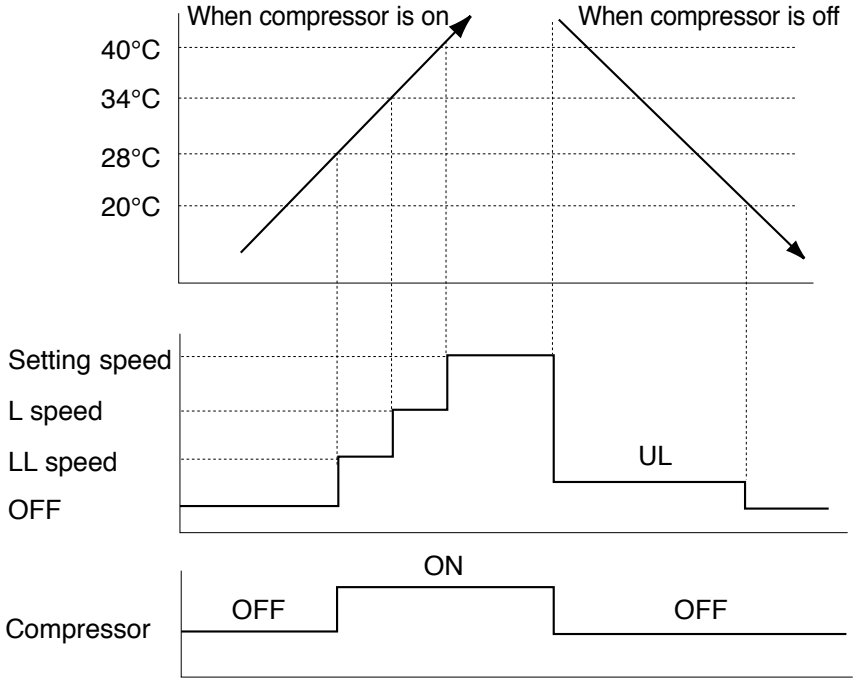
INDOOR FAN CONTROL

◆ When compressor begins operating

The temperature of indoor heat exchanger	Indoor fan speed
below 28°C	off
28°C ~ below 34°C	LL speed
34°C ~ below 40°C	L speed
above 40°C	setting speed

◆ When compressor stops operating

The temperature of indoor heat exchanger	Indoor fan speed
above 20°C	UL speed
below 20°C	off
after 10 minutes when compressor stops operating	off

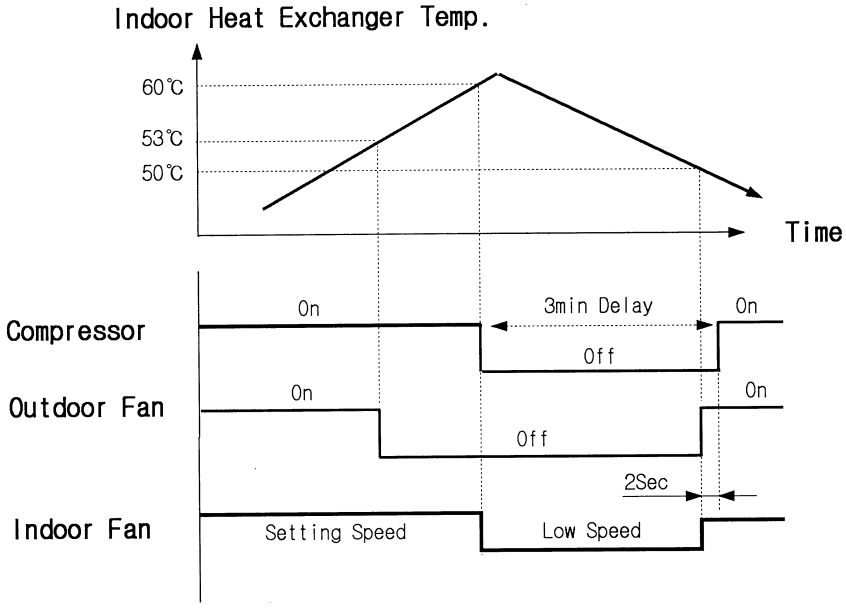


7 Overload protection control

AT HEATING MODE

● 7K/ 9K/ 12K

- ◆ If indoor heat exchanger temp. is over 53°C, outdoor fan turns off.
- ◆ If indoor heat exchanger temp. is over 60°C, outdoor compressor stops and Indoor fan speed is low.
- ◆ After compressor and fan are off if indoor heat exchanger temp. is below 50°C, indoor fan and outdoor compressor and outdoor fan operate normally.



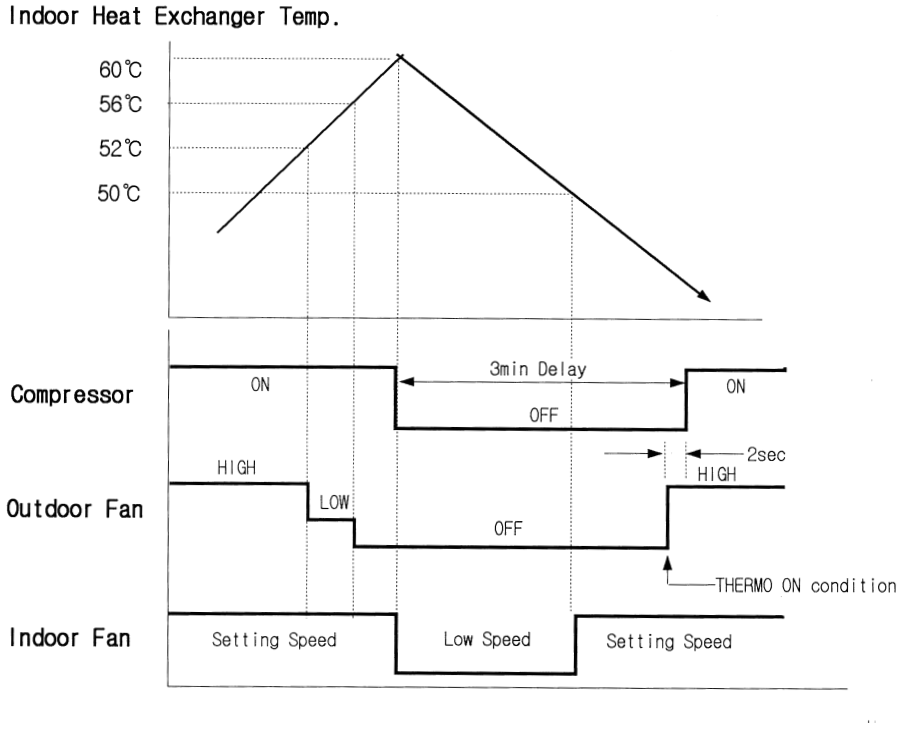
● 18K/ 24K

◆ If indoor heat exchanger temp. is over 52°C, outdoor fan is low.

◆ If indoor heat exchanger temp. is over 56°C, outdoor fan turns off.

◆ If indoor heat exchanger temp. is over 60°C, outdoor compressor stops and Indoor fan speed is low.

◆ After compressor and fan are off if indoor heat exchanger temp.
is below 50°C, indoor fan and outdoor compressor and outdoor fan operate normally.



8 Low Temp Release

AT COOLING MODE

● 7K/ 9K/ 12K

◆ First freezing protection

-If the temperature of indoor heat exchanger is below 2°C for over 6minutes, the outdoor fan turns off.

-If the temperature of indoor heat exchanger increase over 5°C during the first protection function, the first freezing protection function is released and the outdoor fan turns on.

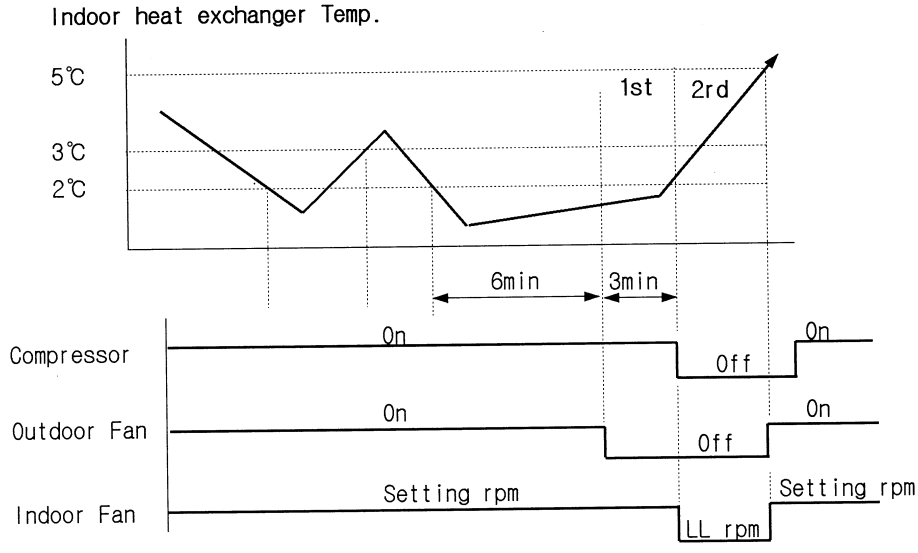
◆ Second freezing protection

-If the temperature of indoor heat exchanger does not increase over 5°C in 3 minutes after First freezing protection, compressor turns off.

-If the temperature of indoor heat exchanger increase over 5°C during the second protection function, the second freezing protection function is released and compressor operates normally after 10 minutes.

◆ If the temperature of indoor heat exchanger increase over 3°C during 6 minutes countiong, 6 minutes counter is cleared.

◆ Operating Pattern



● 18K/ 24K

-If the temperature of indoor heat exchanger is below 5°C, outdoor fan is low.

-If the temperature of indoor heat exchanger increase over 6°C during the fan low, outdoor fan is high.

◆ First freezing protection

-If the temperature of indoor heat exchanger
is below 2°C for over 3 minutes, outdoor fan turns off.

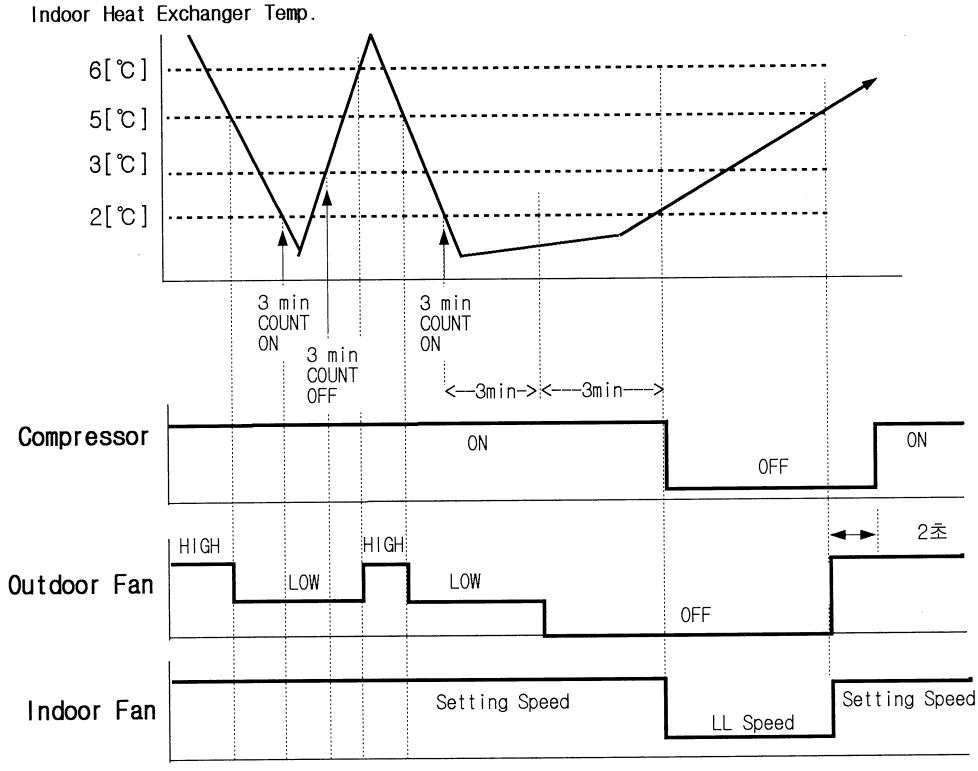
-If the temperature of indoor heat exchanger increase over 5°C during the first protection function, the first freezing protection function is released and the outdoor fan turns on.

◆ Second freezing protection

-If the temperature of indoor heat exchanger does not increase over 5°C in 3 minutes after First freezing protection, compressor turn off and indoor fan is “LL”speed.
-If the temperature of indoor heat exchanger increase over 5°C during the second protection function, the second freezing protection function is released and compressor operates normally after 10 minutes.

◆ If the temperature of indoor heat exchanger increase over 3°C during 3 minutes counter is cleared.

◆ Operating Pattern



9 Defrost control

Defrost operation is controlled by sensing the temperature of indoor heat exchanger

◆ **How to sense defrost conditions**

A condition

The temperature of indoor heat exchanger is checked in intervals of 1 minute. In case the temperature of indoor heat exchanger drops more than 0.5°C for 6 minutes, it is considered as one cycle. If it happens 3 times continuously, It is said that " A condition" is satisfied.

B condition

If the temperature of indoor heat exchanger is below about 40°C when the compressor is on, it is considered as defrost "B condition"

C condition

When the accumulating time of compressor ON is over 20 minutes.

D condition

When the accumulating time of compressor ON is over 3Hr.

E condition

When operating time of compressor without stopping is over 6 minutes.

F condition

If the compressor is off(thermo off) when the temperature of indoor heat exchanger is below about 46°C, it is considered as one cycle.
If it happens 2 times continuously, It is said that "F condition" is satisfied.

G condition

When the accumulating time of compressor ON is over 90 minutes.

◆ **Defrost operation conditions**

A×**B**×**C** condition or

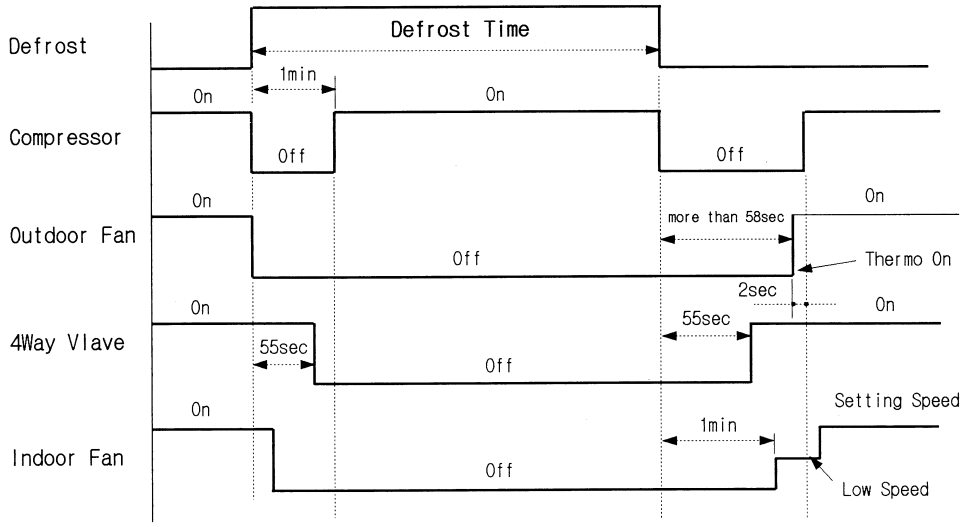
B×**D**×**E** condition

F×**G** condition

Defrost time : 5~8 minutes

◆ **Operation pattern**

◆ **Operation pattern**



10 The others

Time delay safety control
The compressor is stopped for 3minutes to balance the pressure in the refrigeration cycle.
(protection of compressor)

4-2 INVERTER

1 Auto Operation

;It carries out cooling or heating automatically after detecting the room temperature

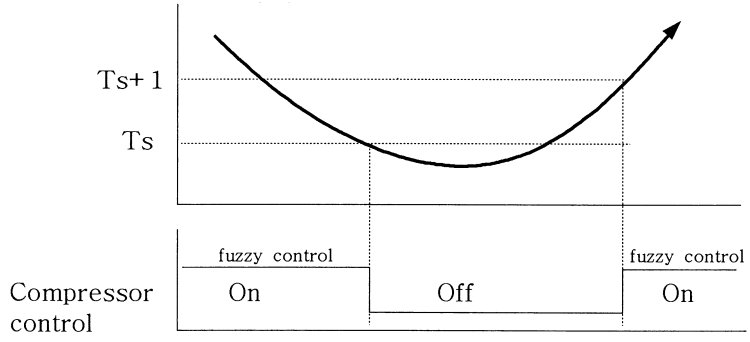
◆ Operating pattern
room temperature(ºC) ΔT=-2, -1, 0, 1, 2ºC

Room Temp ≥ 21ºC+ΔT	Cooling : Ts=24ºC + ΔT
Room Temp < 21ºC+ΔT	Heating : Ts=24ºC + ΔT

◆ Operating specification
room temperature ≥ 21ºC+ΔT, The unit is operated in the Cool mode.
room temperature < 21ºC+ΔT, The unit is operated in the Heat mode.

2 Cooling Operation

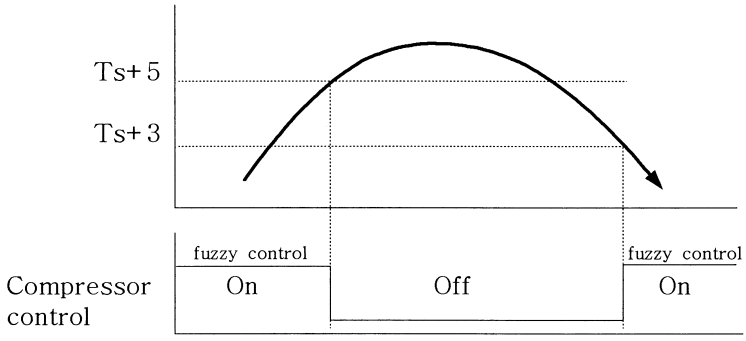
◆ Operating pattern
room temperature(ºC) TS=Remocon setting temp.



◆ Operation specification
- Compressor on : Room temp. = Setting temp(Ts)+1ºC
- Compressor off : Room temp. = Setting temp(Ts)
- The fan speed of indoor unit follows the setting volume of remote control

3 Heating Operation

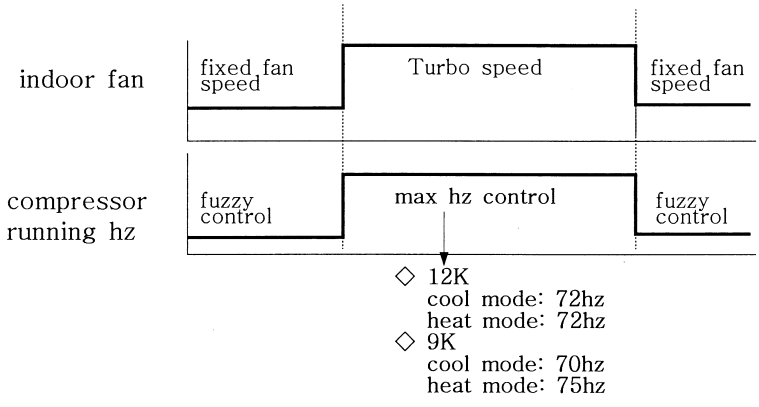
◆ Operating pattern Ts : Remocon setting temp.



◆ Operating specification
- Compressor on : Room temp. = Setting temp(Ts)+3ºC
- Compressor off : Room temp. = Setting temp(Ts)+5ºC
- The fan speed of indoor unit follows the setting volume of remote control

4 Turbo Operation

◆ Operating pattern



◆ Operating specification

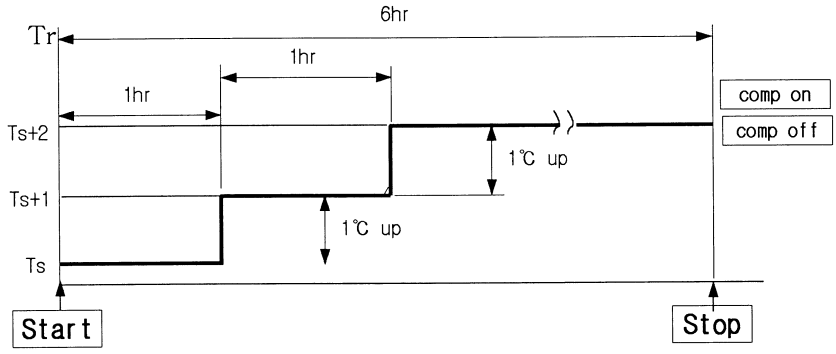
The turbo function operates for 30 minutes with the maximum setting before returning automatically to the mode and temperature previously selected.

5 Sleeping Operation

Cooling operation

◆ Operating pattern

Ts : Remocon setting temp.



◆ Operating specification

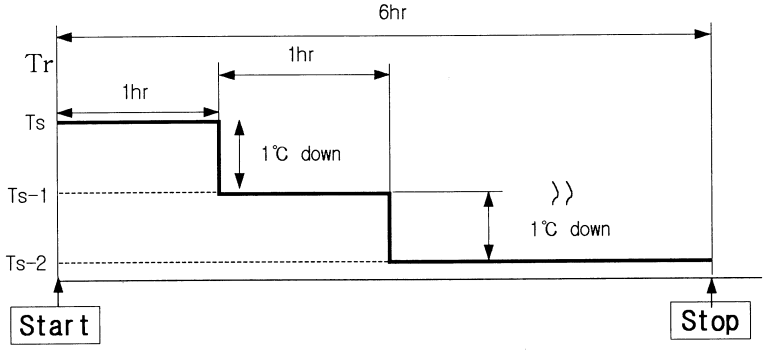
When you set the sleep mode, the following movement will start to avoid over cooling.

- The indoor fan speed is fixed by setting the remote controller.
- The setting temperature will rise by 1ºC at the starting operation and by 1ºC one hour later.
- The operation will stop after 6 hours.

Heating operation

◆ Operating pattern

Ts : Remocon setting temp.



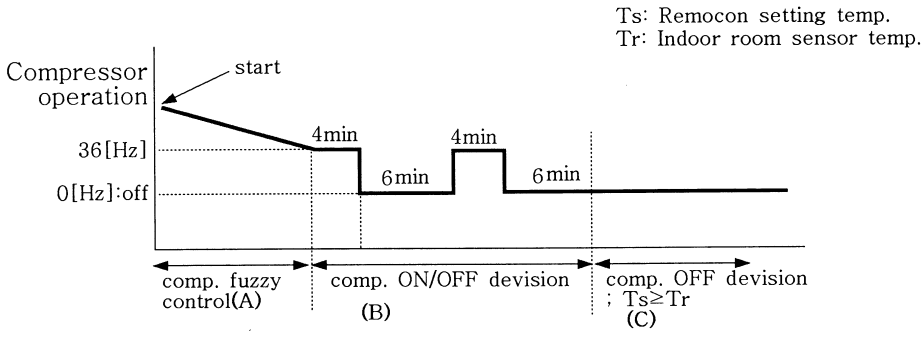
◆ Operating specification

When you set the sleep mode, the following movement will start to avoid overheating.

- The indoor fan speed is fixes by setting the remote controller.
- The setting temperature will be dropped by 1ºC one hour later.
- The operation will stop after 6 hours.

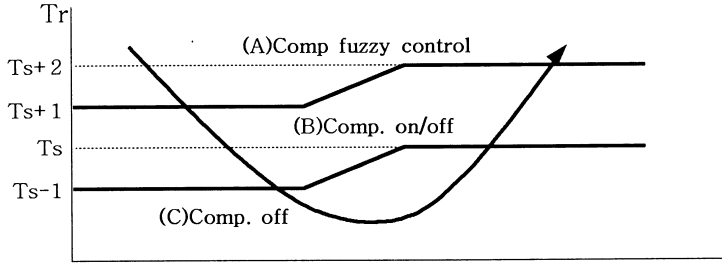
6 Dry Operation

◆ Operating pattern



◆ Operating specification

- Mode check

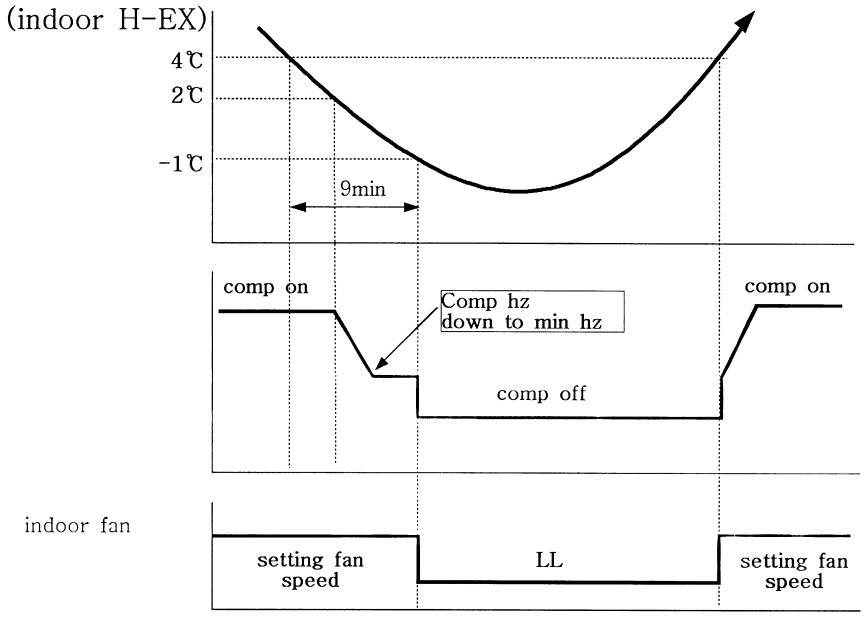


A) room temperature ≥ Ts + 1 : Cooling mode control
B) Ts+1 > room temperature ≥ Ts : compressor on/off control(control Hz=36Hz)

C) room temperature < Ts : Monitoring control (Comp = off)

7 Freezing protection control on cool mode

◆ Operating pattern



◆ Operating specification

-1st freezing protection
If the temperature of indoor heat exchanger is below 2ºC, the operating frequency of compressor down to Min hz(35Hz).

-2nd freezing protection
If the temperature of indoor heat exchanger is below -1ºC for over 9 minutes, the compressor turns off.

-If the indoor heat exchanger increases over 4ºC during the freezing protection function, the freezing protection function is released and compressor operates normally.

8 Detrost Control in heatmode

Defrost operation is controlled by sensing the temperature of outdoor unit's heat exchanger and temperature of outdoor and accumulating time of compressor operation.

◆ How to sense defrost conditions

A condition

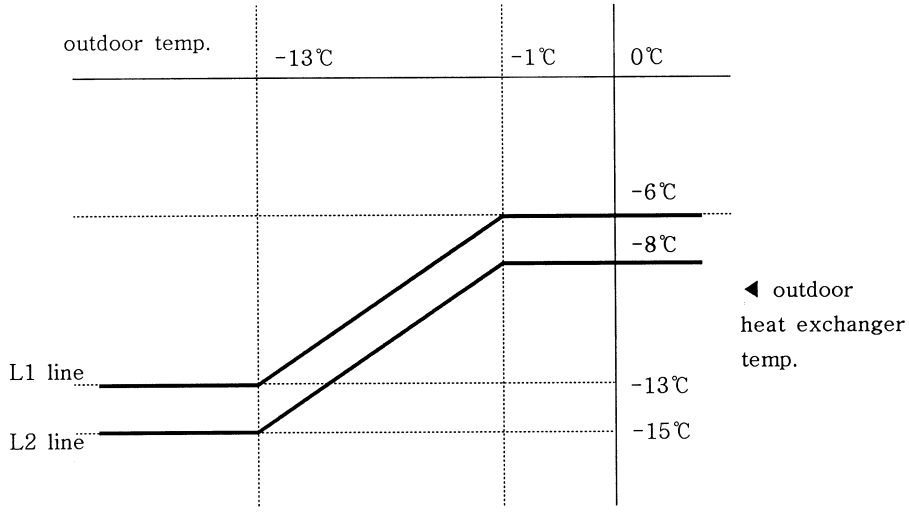
Outdoor heat exchanger operates under L1 line for over 120Mminutes.

B condition

When operating time of compressor without stopping for over 35minutes.

C condition

Outdoor heat exchanger operates under L2 line for over 3minutes



◆ Defrost operation conditions

A condition

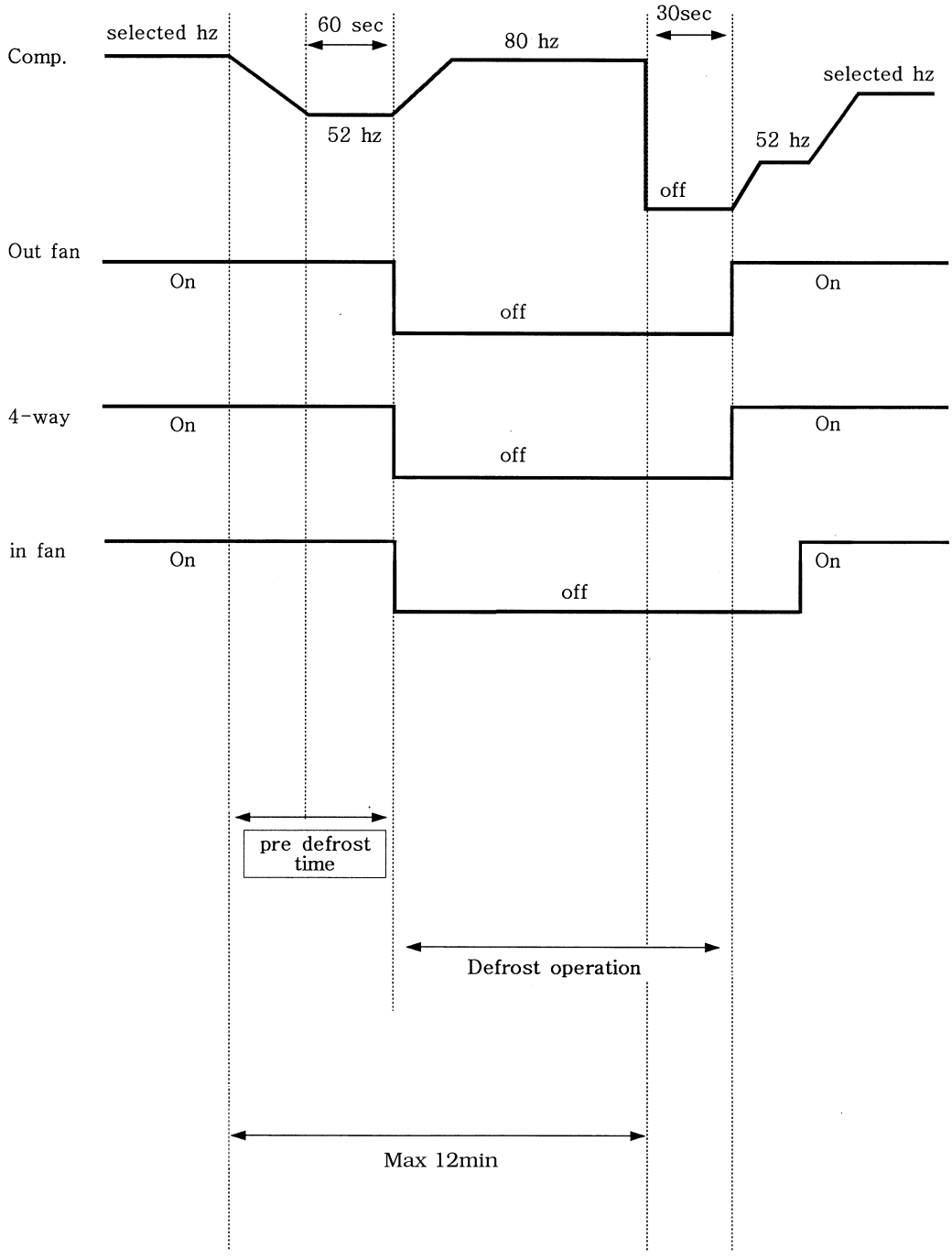
Bx**C** condition

◆ Defrost absolution conditions

- If the temperature of outdoor heat exchanger is over 20ºC.
- When defrost operation time is over 12 minutes.

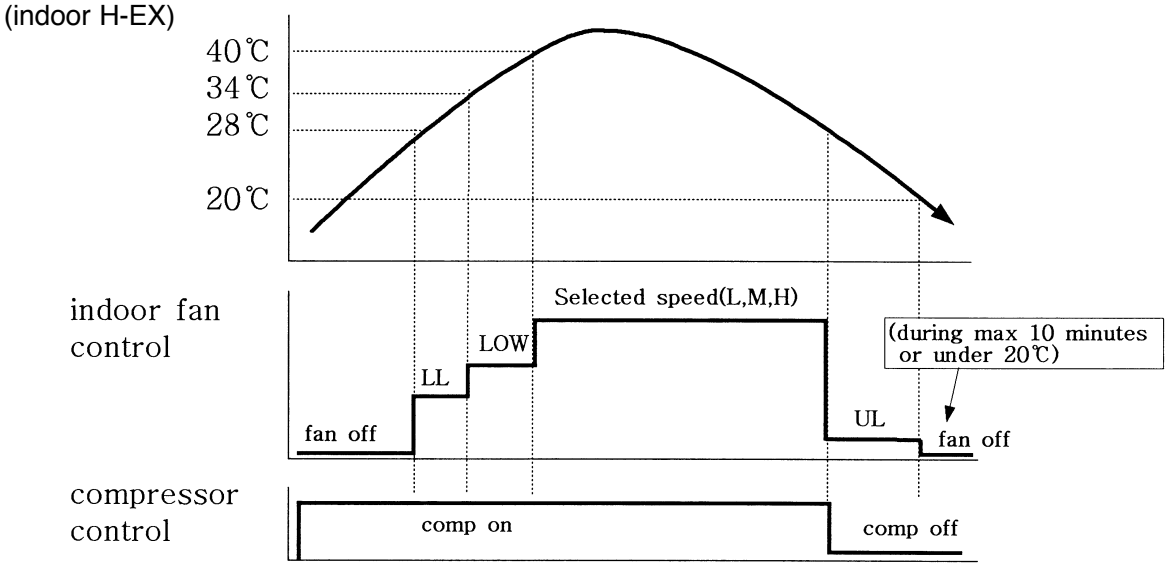
◆ Operating pattern

◆ Operating pattern



9 Prevention against cold wind

◆ Operating pattern



◆ Operating specification

- For about 3~5 minutes after initial operation, thermo control, Defrost, the indoor fan will either not operate or operate very slowly, then switch to the selected fan speed.
- This period is to allow the indoor unit's heat exchanger to prewarm before emitting warm air.

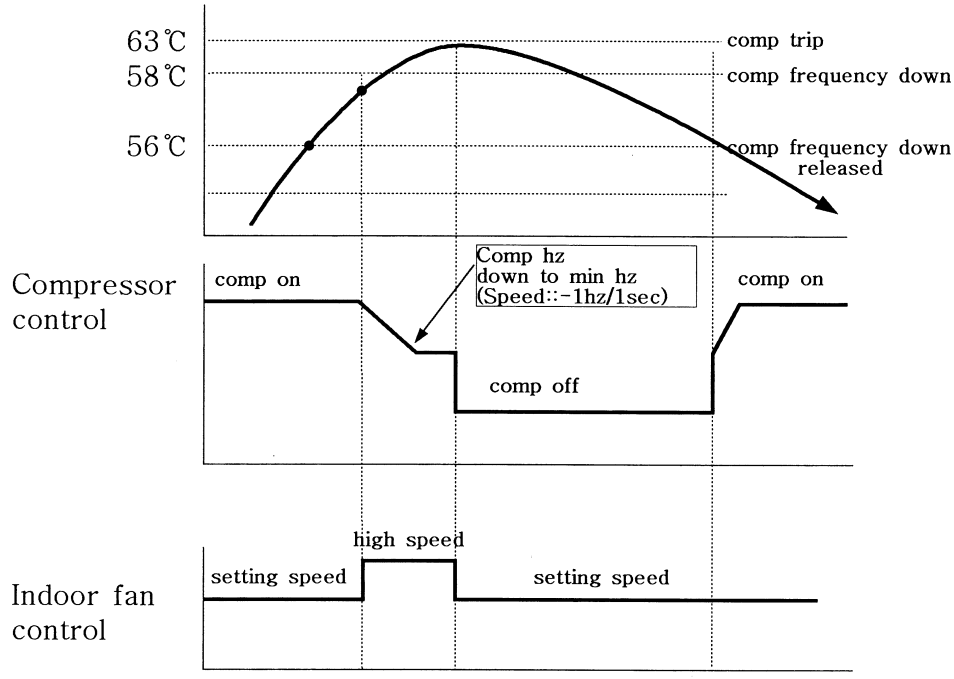
10 High temperature control of Comp discharge gas

- If temperature of Comp discharge gas is over 113ºC, the comp's frequency down. (down speed : -1hz / 1sec to 10hz)
- If temperature of Comp discharge gas is over 125ºC, the comp turns off.
- If temperature of Comp discharge gas is over 109ºC, the comp frequency hold.
- If temperature of Comp discharge gas drops under 106ºC during the protection, the comp's hz down stop and operates normally.

11 Highload protection control in heat mode

◆ Operating pattern

(indoor H-EX)



◆ Operating specification

-1st protection
;If the indoor heat exchanger is over 58ºC, the comp hz down. hz down speed: -1hz / 1sec
-2nd pretection
;If the indoor heat exchanger is over 63ºC, the comp turns off.
-If the indoor heat exchanger drops under 56ºC during the first protection function, the high temperature protevtion function relase and operates normally.

12 Total current control

- If the current which checked at current sensor of the outdoor pcb is over selected value(8.6A~14A), the comp's frequency down.
  (down speed : -1hz/1sec to 5hz, -1hz/5sec to min frequency)

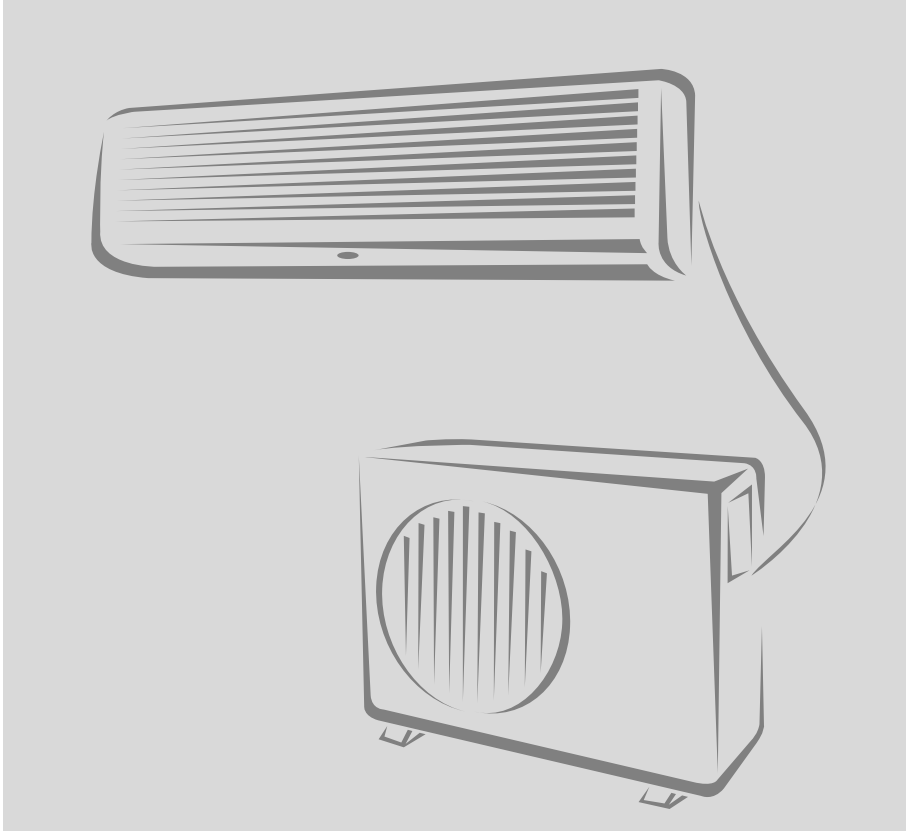
- If the current drops under the selected value, the comp operates normally.

Inverter Model

Name & Function 81

Refrigerant Refill 84

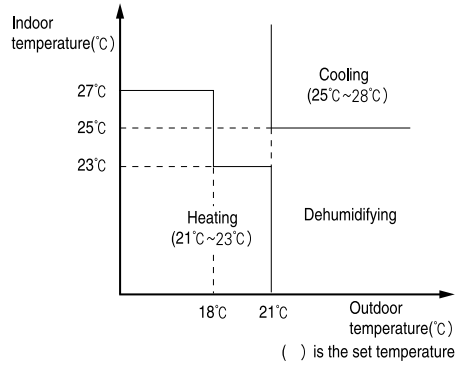
Pressure Graph 85



1 Name & Function

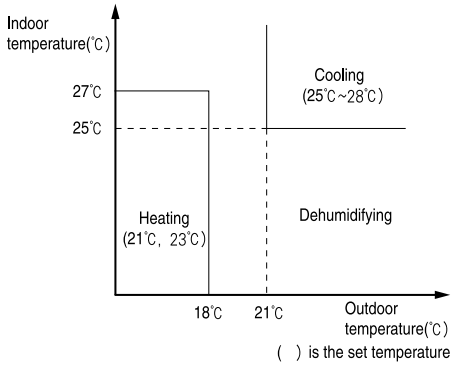
1. AUTO CHANGEOVER FUNCTION :
   *To operate in the "Auto change over" mode when set at "AUTO"mode.
   *According to the outdoor and indoor temperatures while starting the operation, one of the modes from the cooling, dehumidifying and heating is selected automatically to operate.
   *The operation mode shall be set again if the other condition different from that of the operating conditions(cooling, heating, dehumidifying mode) is kept for 60 minutes during the change-over operation.

   1) Mode selection for operation start



Outdoor temperature	Indoor temperature	Operation type	Set temperature	Wind volume
21℃ over	31℃ over 29℃ over 31℃ less 27℃ over 29℃ less 25℃ over 27℃ less	Cooling	28℃ 27℃ 26℃ 25℃	Automatic
21℃ over	25℃ less	Dehumidifying	to be set automatically by controller according to the indoor temperature at the operation start.	
18℃ over 21℃ less	23℃ over			
18℃ less	27℃ over			
18℃ over 21℃ less	23℃ less	Heating	to be set automatically by controller according to the indoor temperature at the operation start.	
18℃ less	27℃ less		23℃ 21℃	

   2) Mode selection during the operation



Outdoor temperature	Indoor temperature	Operation type	Set temperature	Wind volume
21℃ over	31℃ over 29℃ over 31℃ less 27℃ over 29℃ less 25℃ over 27℃ less	Cooling	28℃ 27℃ 26℃ 25℃	Automatic
21℃ over	25℃ less	Dehumidifying	to be set automatically by controller according to the indoor temperature at the operation start.	
18℃ over 21℃ less	All area			
18℃ less	27℃ over			
18℃ less	21℃ over 23℃ less 21℃ less	Heating	23℃ 21℃	

2. COOL MODE : The unit operates according to the difference between the setting and room temperature. (18°C~30°C)

3. HEAT MODE : The unit operates according to the difference between the setting and room temperature.(16°C~30°C)
   *Prevention against cold wind : For about 3~5 minutes after initial operation, thermo control or "de-ice", the indoor fan will either not operate or operate very slowly, then switch to the selected fan speed. This period is to allow the indoor unit's heat-exchanger to prewarm before emitting

warm air.
*High temperature release function : The outdoor unit for and compressor ON/OFF control for safety operation, when the overheat is heat exchanger of indoor unit.
*De-ice : Deicing operation is controlled by indoor unit's heat exchanger temperature and accumulating time of compressor's operation.
De-ice end by sensing of the processing time by de-ice Condition.

4. DRY MODE :
*According to the difference between the set temperature (Ts) and indoor temperature (Tr), the operation frequency of compressor as per area is controlled.
(Cooling area/COMPor ON/OFF area/Monitoring area)
➟ Cooling area : same as the cool mode
➟ COMPor ON/OFF area : repeatation of COMPor frequency 36[Hz] for 4 minutes operation/0[Hz](off) for 6 minutes
➟ Monitoring area : COMPor off.

5. TURBO MODE : This mode is available in AUTO, COOL, HEAT, DRY, FAN MODE.
When this button is pressed at first, the air conditioner is operated "powerful" state for 30 minutes regardless of the set temperature, room temperature.
When this button is pressed again, or when the operating time is 30 minutes, turbo operation mode is canceled and returned to the previous mode.
*But, if you press the TURBO button in DRY or FAN mode that is changed with AUTO mode automatically.

6. SLEEP MODE : Sleep mode is available only in COOL or HEAT mode.
The operation will stop after 6 hours.
*In COOL mode : The setting temperature is automatically raised by 1°C each 1hour
When the temperature has been raised by total of 2°C, that temperature is maintained.
*In HEAT mode : The setting temperature is automatically droped by 1°C each 1hour.
When the temperature has been droped by total of 2°C, that temperature is maintained.

7. FAN SPEED : Manual (3 step), Auto (4 step)
Fan speed automatically varies depending on both the difference between setting and the room temperature.

8. COMPULSORY OPERATION :
You can select the 5 Way function with operating mode of the air conditioner for more comfortable circumstances. You can use the 5 Way function with the indoor unit as well as the remote control. Thus, you can use this function even though you have lost your remote control.

Using with the indoor unit

◆ Press the ⏻ (ON/OFF)button one or more times until the desired mode is selected.

To obtain a(n)...	Then select...
Normal operating	(STANDARD)mode
Reducing the uncomfortable temperature swing	(NATURE)mode
Stronger air-conditioner environment faster	(QUENCHING)mode
Energy saving	(SAVING)mode
Quiet environment	(SILENT)mode

◆ To stop the operating, press the ⏻ (ON/OFF) button until all indicators turn off.

Note - Even if the air conditioner has been turned on via the ON/OFF button, operations can still be controlled using the remote control as usual.

9. SWING : BLADE-H is rotated vertically by the stepping motor.
*Memory louver : When ON/OFF button is pressed at stop state, the BLADE-H returns to its original location which is operating state before stop
*Swing Set : Press the button under the remote control is displayed on LCD the and the blades move up and down. If the one more time press the button, blade location is stop.

10. 24-Hour ON/OFF Real Setting Timer. : The air conditioner is turned ON at a specified time using On Timer .
OFF TIMER : The air Conditioner is turned OFF at a specified time using Off Timer .
*ON TIMER : Only timer LED lights on.
*OFF TIMER : Both timer and operation LED lights on.

11. SELF Diagnosis

Indoor unit

LAMP of Display Monitor						Description
						● : Lamp on ◎ : Lamp flickering X : Lamp off
TIMER	STD	NATURE	POWER	SAVING	SILENCE	
◎	X	X	X	X	X	Indoor unit room temperature sensor error(open or short)
◎	◎	X	X	X	X	Indoor unit heat exchanger temperatute sensor error(open or short)
X	X	◎	X	X	X	Indoor fan motor mal function
◎	◎	◎	X	X	X	EEPROM error
◎	◎	◎	◎	◎	◎	option error
X	◎	◎	X	X	X	Outdoor unit temperature sensor error (open or short) - outdoor temp-sensor - deice temp-sensor - OLP temp-sensor - discharge temp-sensor - heatsink temp-sensor
◎	X	◎	X	X	X	Abnormal communication (Indoor - Outdoor unit)
X	X	X	◎	X	X	Abnormal increase of operation current
X	X	◎	◎	X	X	Abnormal increase of discharge and OLP temperature
◎	X	X	◎	X	X	Over current of IPM circuit
X	◎	◎	◎	X	X	Trouble of the PTC circuit of the outdoor
◎	X	◎	◎	X	X	Trouble of AC current sensor (open/short) and Leakage of refrigerant(R-22)

Outdoor unit

LAMP of inverter PBA			Description ● : Lamp on ◎ : Lamp flickering X : Lamp off
Yellow	Blue	Red	
X	◎	●	Normal operation and communication (Indoor - Outdoor unit)
X	X	●	Abnormal communication (Indoor - Outdoor unit)
X	X	X	Trouble of the control power of the outdoor
◎	X	X	Abnormal increase of heatsink temperature
◎	X	●	Abnormal increase of discharge temperature
◎	●	X	Abnormal increase of operation current
◎	●	●	Abnormal increase of OLP temperature
X	X	◎	Over current of IPM circuit
X	●	◎	Over voltage of IPM circuit
●	◎	●	Over voltage and current of PFC circuit
●	X	◎	Trouble of option setting
◎	◎	X	Trouble of discharge temp-sensor (open/short)
◎	◎	●	Trouble of AC current sensor (open/short) and Leakage of refrigerant(R-22)
◎	X	◎	Trouble of outdoor temp-sensor (open/short)
◎	●	◎	Trouble of deice temp-sensor (open/short)
X	◎	◎	Trouble of heatsink temp-sensor (open/short)
●	◎	◎	Trouble of DC link voltage circuit
◎	◎	◎	Trouble of OLP temp - sensor (open/short)

12. BUZZER SOUND : Whenever the ON/OFF button is pressed or whenever change occurs to the condition which is set up or select, the compulsory operation mode, buzzer is sounded "beep"

2 Refrigerant Refill

• Refill an air-conditioner with refrigerant when refrigerant has been leaked at installing or using

1. Purge air(for new installation only).

↓

2. Turn the 3-way valve clockwise to close, connect the pressure gauge(low pressure side) to the service valve, and open the 3-way valve again.

↓

3. Connect the tank to refill with Refrigerant

↓

4. Set the unit to Low pressure checking mode.
   * Press the ON/OFF switch for 5 second.
   *All lamps blink on the indoor unit.

↓

5. Check the pressure indicated by the pressure gauge(low pressure side).
   * Refer to Low pressure graph.

↓

6. Open the refrigerant tank and fill with refrigerant until the rated pressure is reached.
   * It is recommended not to pour the refrigerant in too quickly, but gradually while operating a pressure valve.

↓

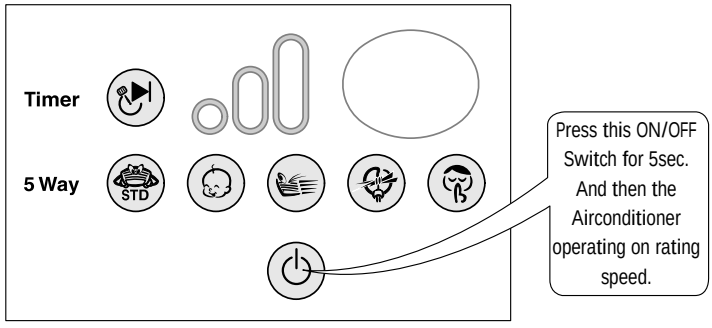
7. Stop operation of the air conditioner.

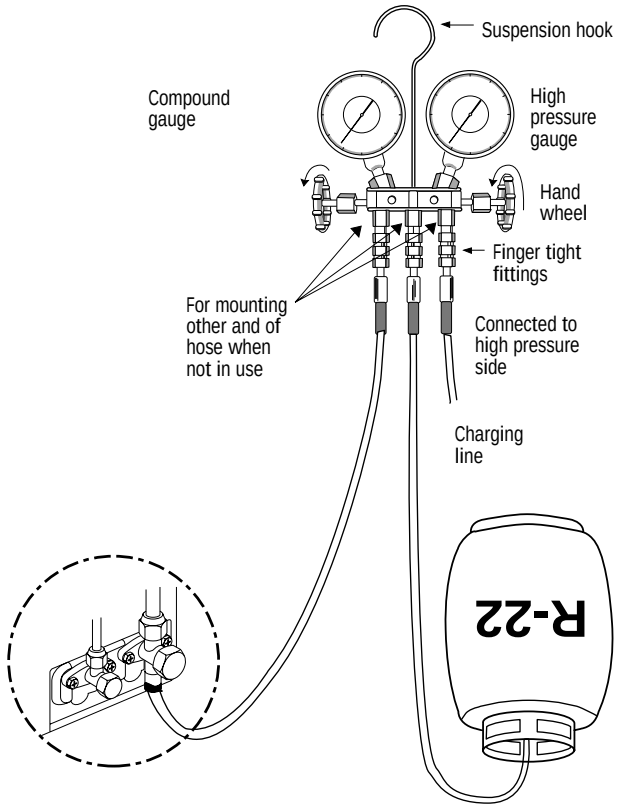
↓

8. Close the 3-way valve, disconnect the pressure gauge, and open the 3-way valve again.

↓

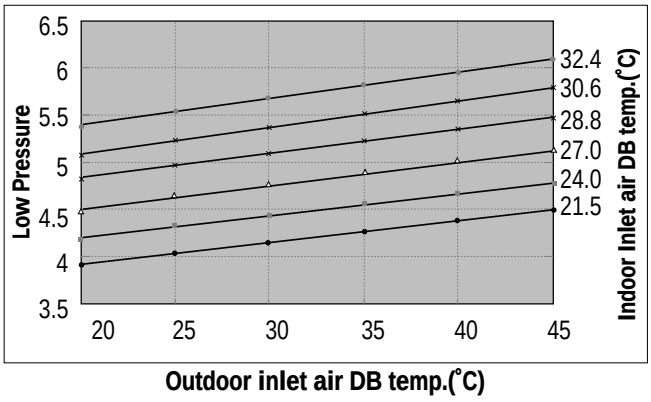
9. Close the cap of each valve.



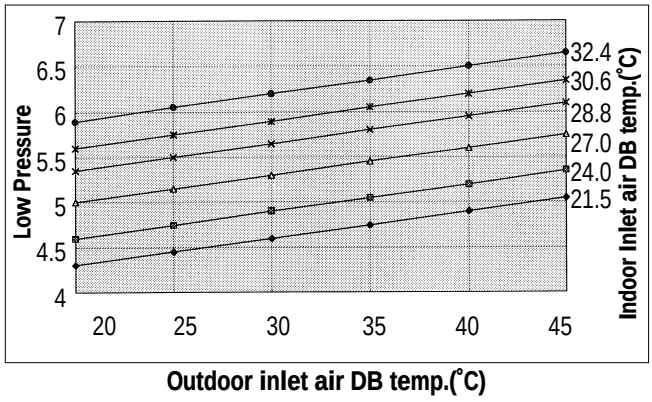


3 Pressure graph

- MODEL NAME : AQV12A1ME (UQV12A1ME)
  AQV12A2ME (UQV12A2ME)
  SH12VA1(SH12VA1X)
  SH12VA2(SH12VA2X)



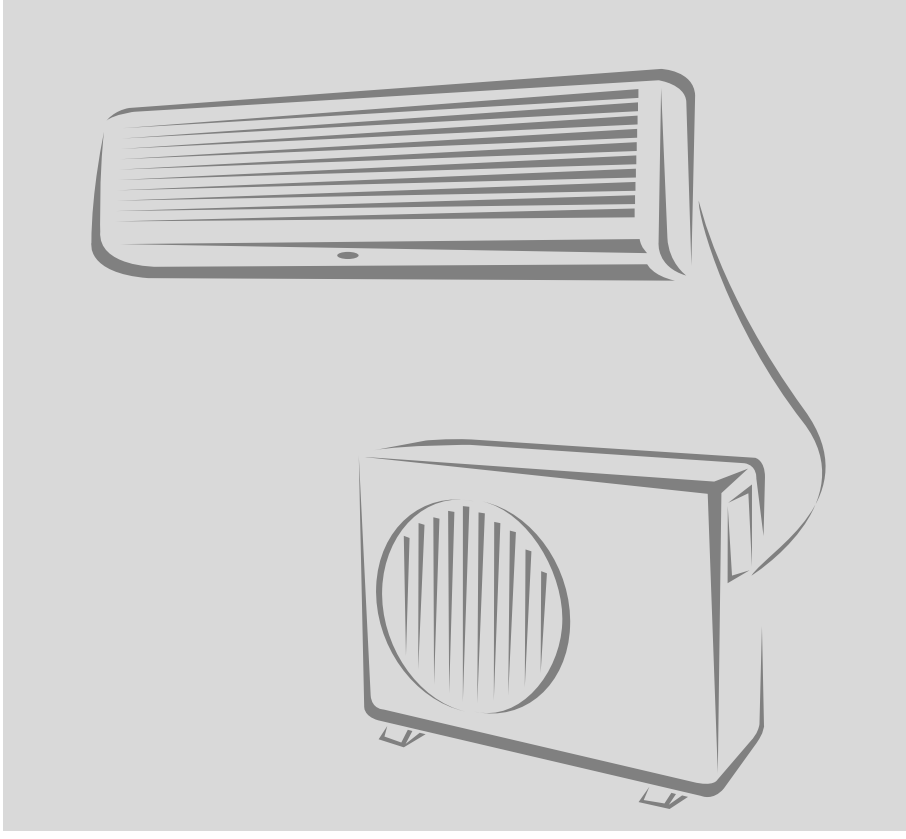
- MODEL NAME : AQV09A1ME (UQV09A1ME)
  AQV09A2ME (UQV09A2ME)
  SH09VA1(SH09VA1X)
  SH09VA2(SH09VA2X)



Diagram

Refrigerating Cycle Block Diagram 87

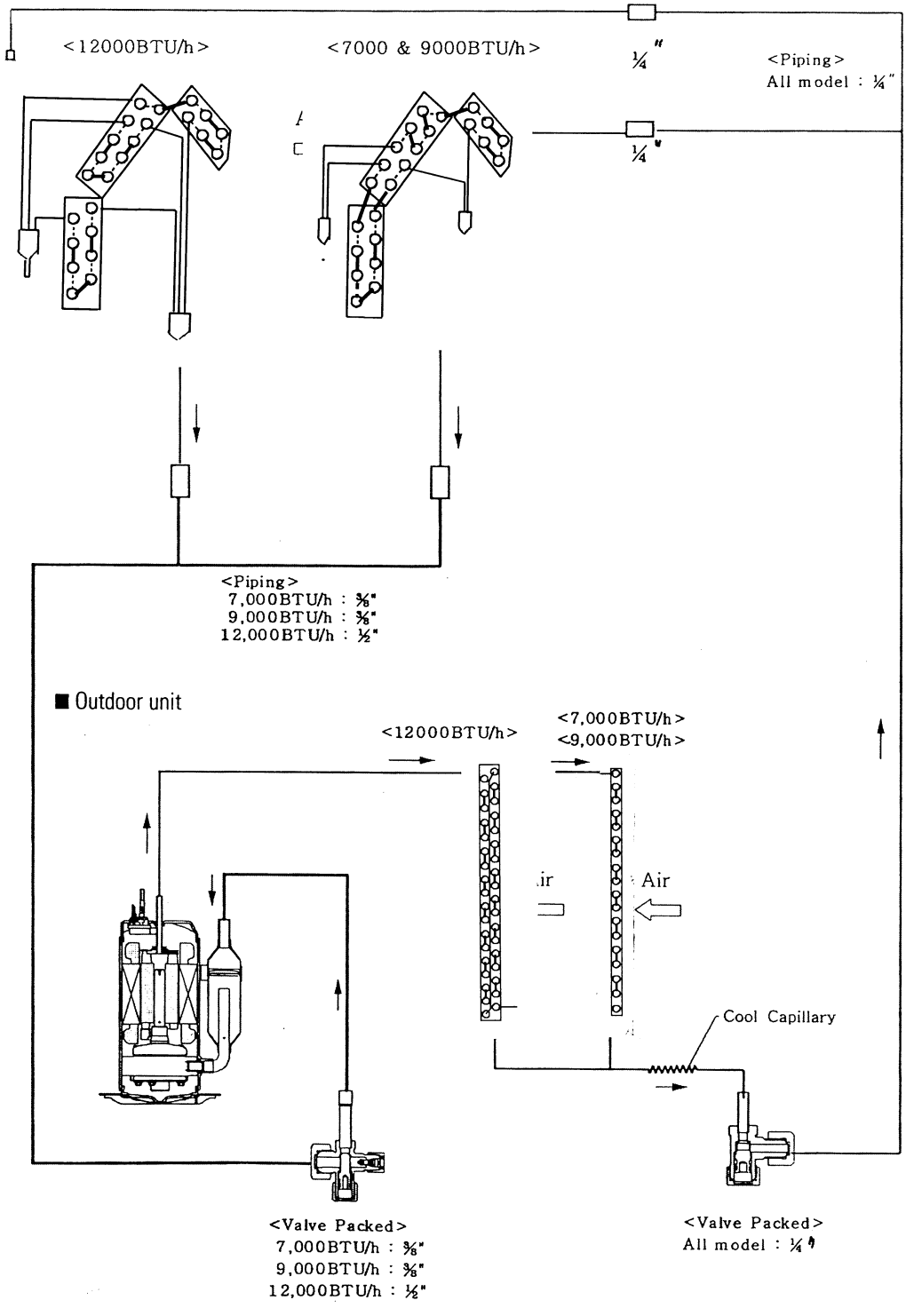
Wiring Diagram(Cooling Only/Heat Pump) 93



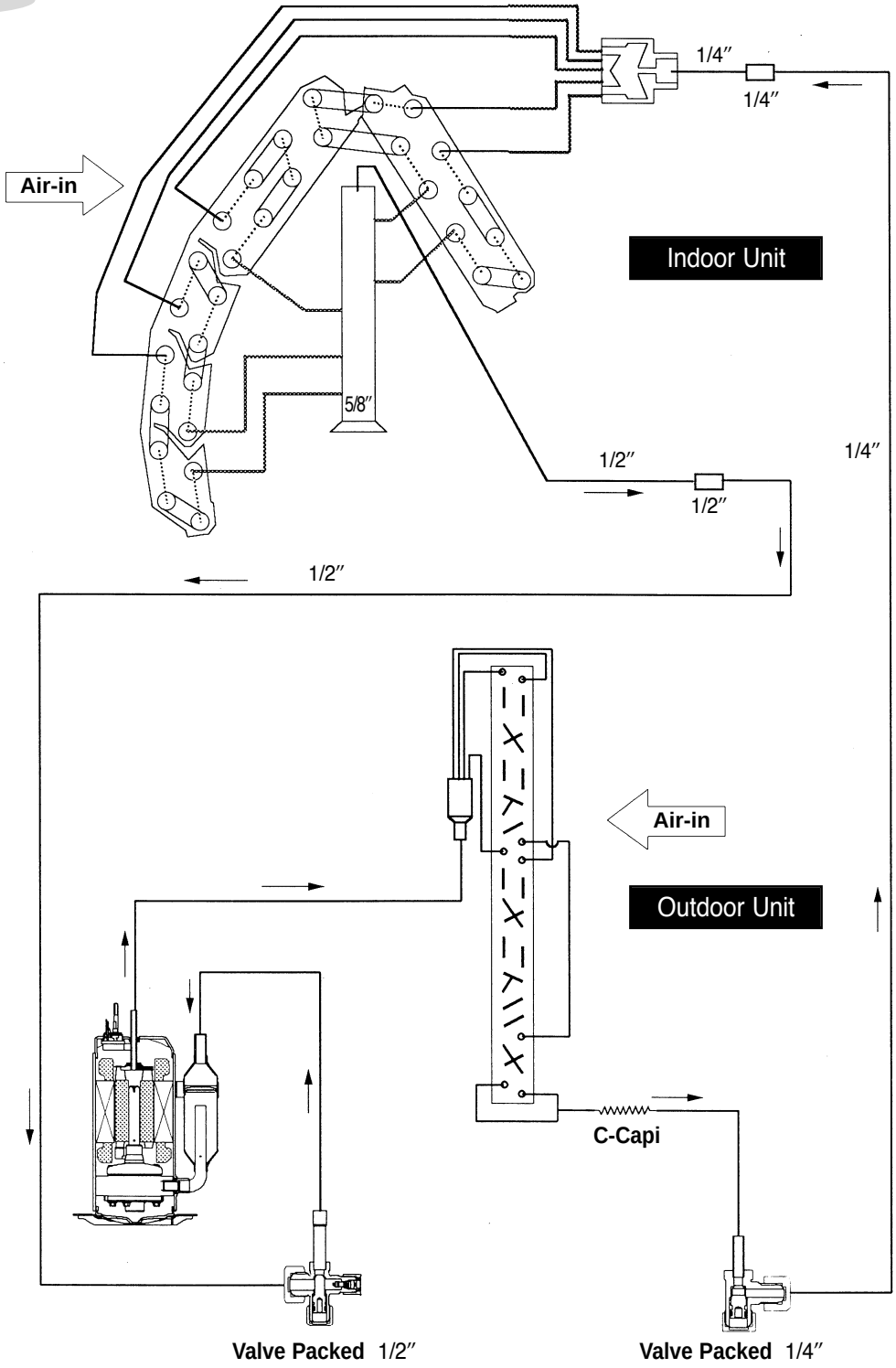
1 Refrigerating Cycle Block Diagram

1 Cooling Only

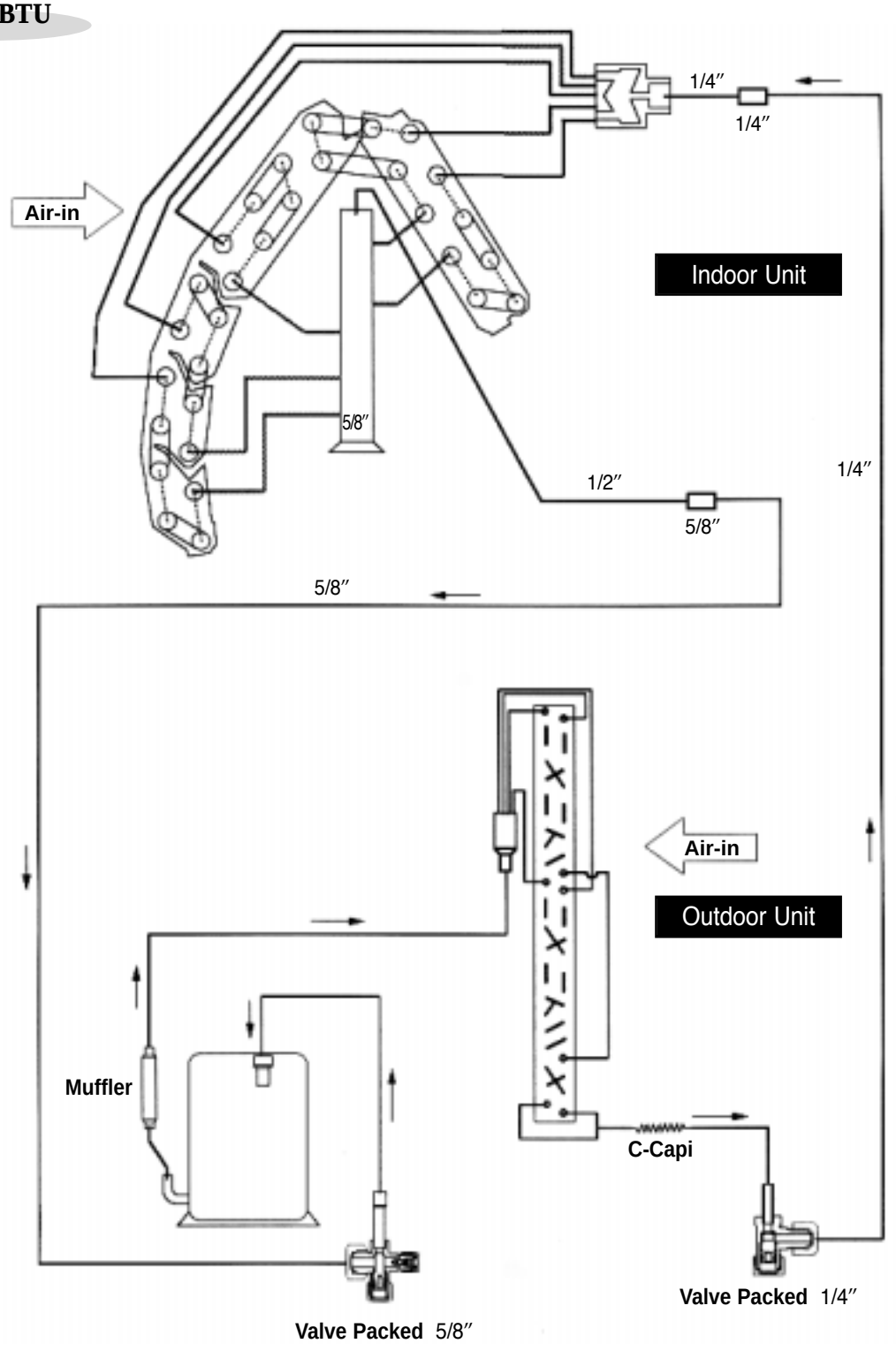
Indoor unit



18,000BTU

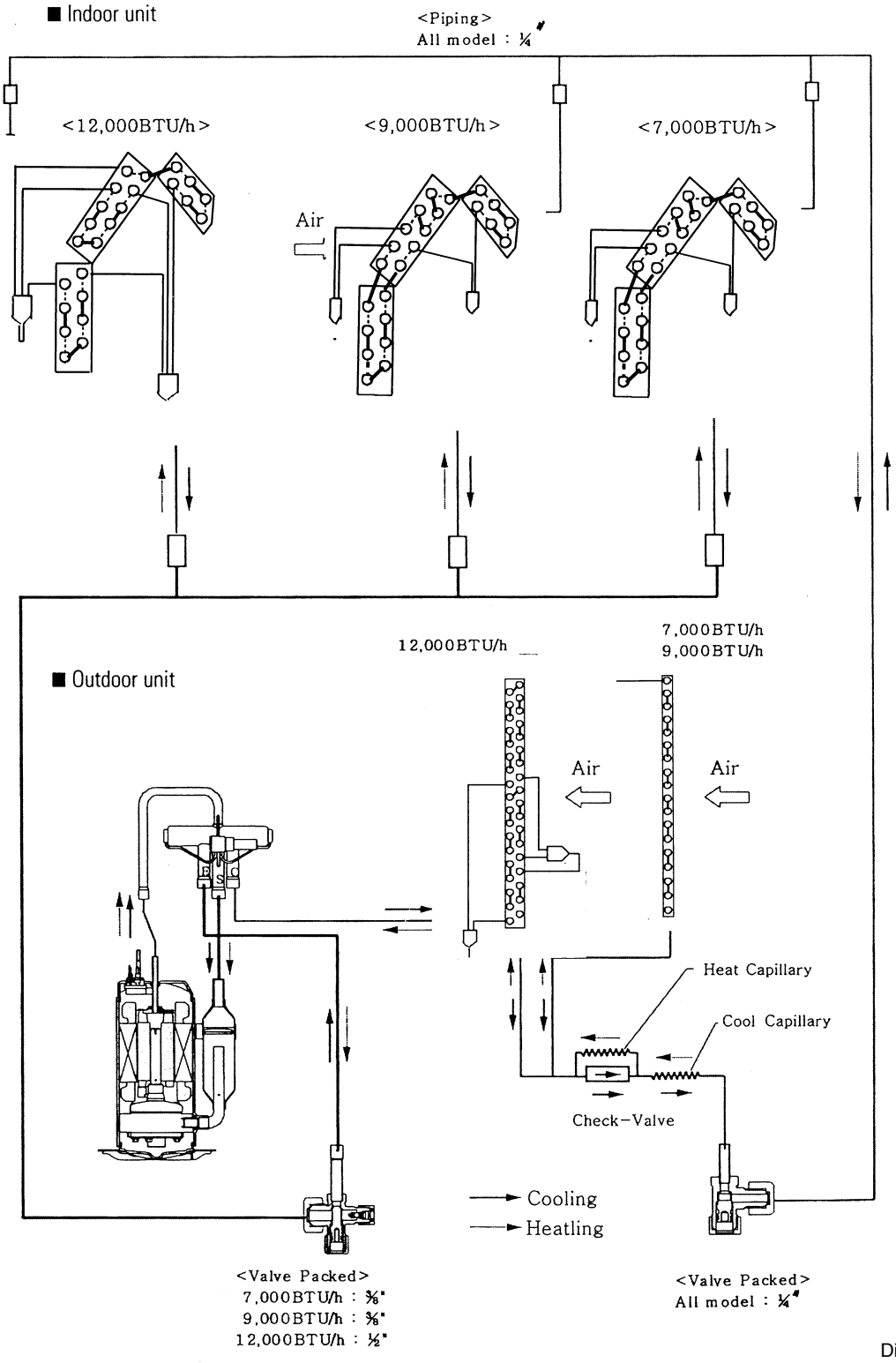

1/4″
1/4″
Air-in
Indoor Unit
5/8″
1/2″
1/2″
1/4″
1/2″
Air-in
Outdoor Unit
C-Capi
Valve Packed 1/2″
Valve Packed 1/4″

24,000BTU

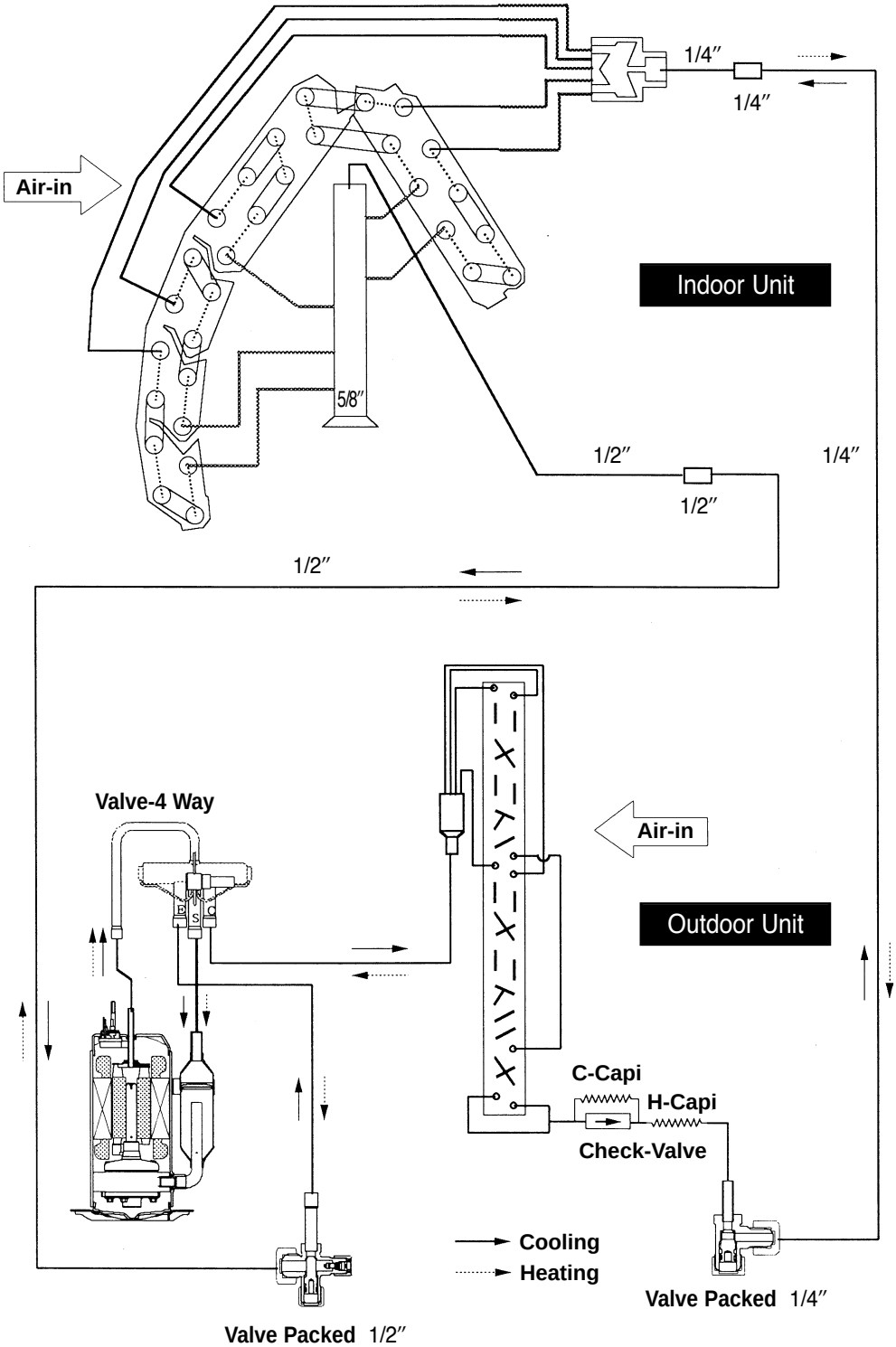

1/4″
1/4″
Air-in
Indoor Unit
5/8″
1/2″
5/8″
1/4″
5/8″
Air-in
Outdoor Unit
Muffler
C-Capi
Valve Packed 1/4″
Valve Packed 5/8″

2 Heat Pump/ Inverter

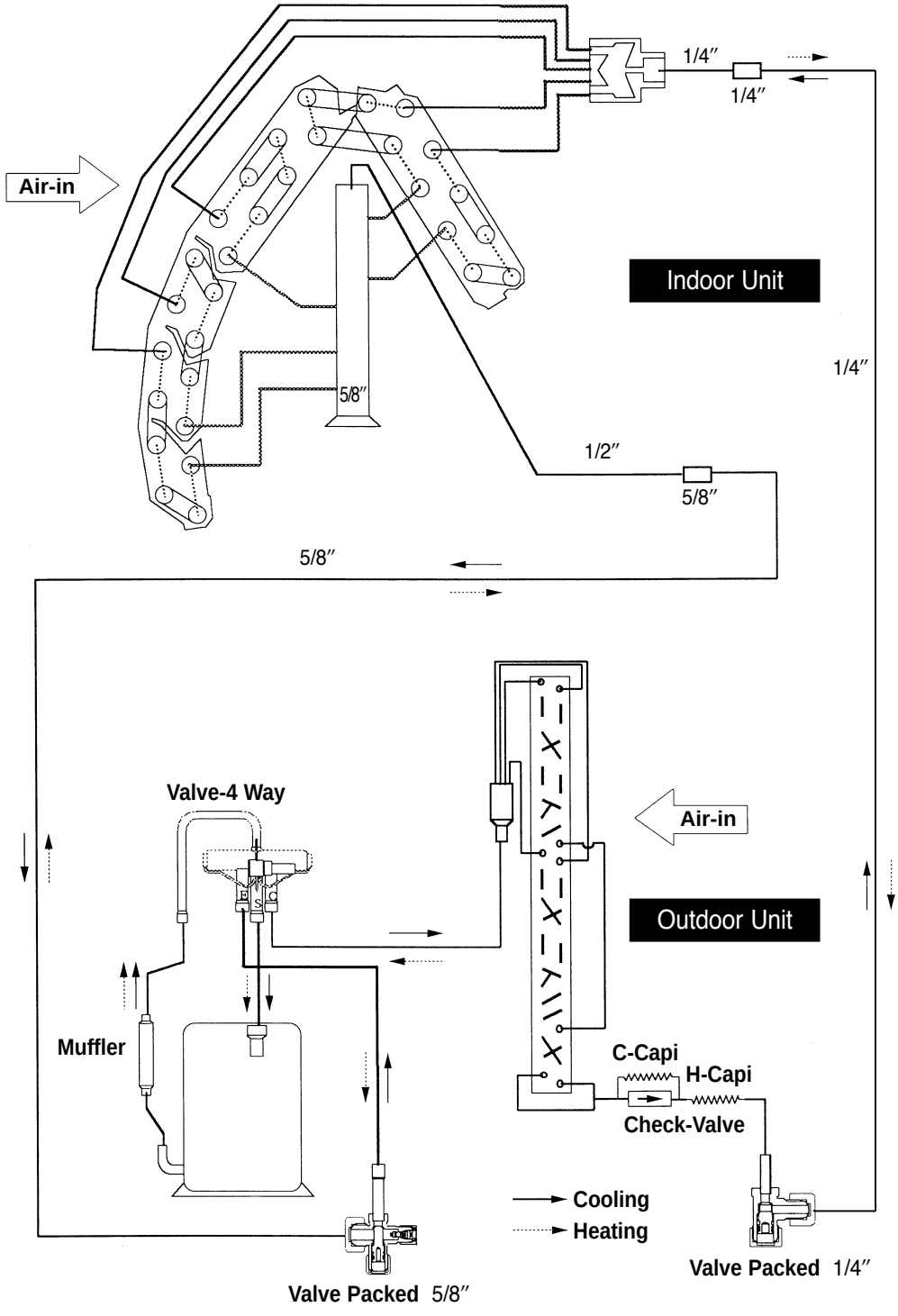
Indoor unit



18,000BTU


1/4″
1/4″
Air-in
Indoor Unit
5/8″
1/2″
1/4″
1/2″
1/2″
Valve-4 Way
Air-in
Outdoor Unit
C-Capi
H-Capi
Check-Valve
Cooling
Heating
Valve Packed 1/4″
Valve Packed 1/2″

24,000BTU

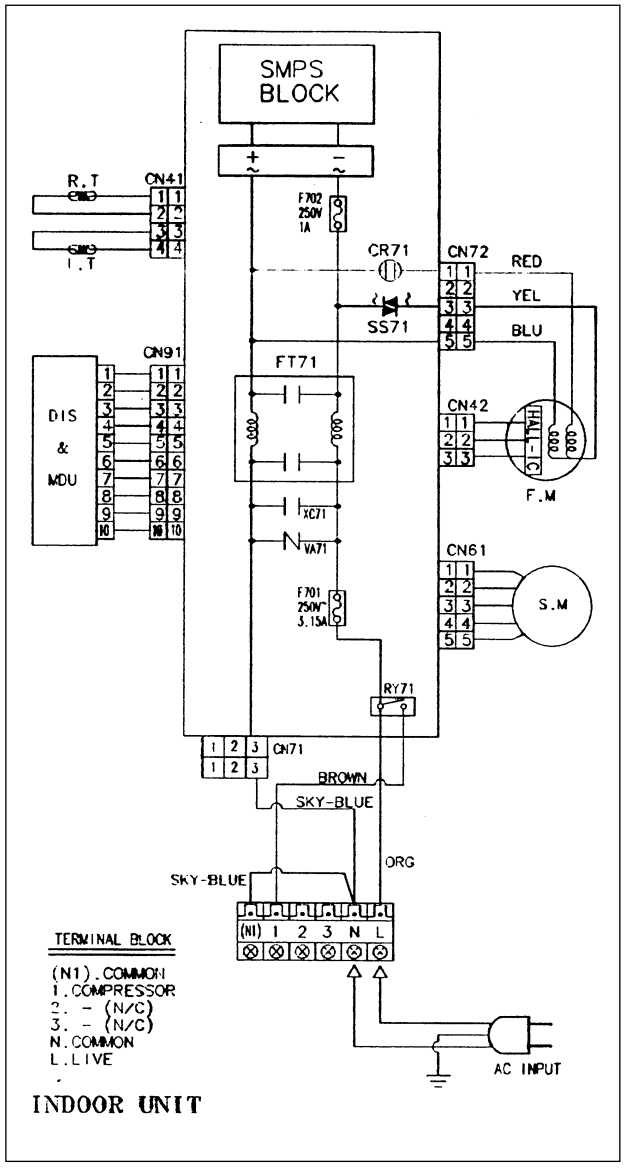

1/4″
1/4″
Air-in
Indoor Unit
1/4″
5/8″
1/2″
5/8″
5/8″
Valve-4 Way
Air-in
Outdoor Unit
Muffler
C-Capi
H-Capi
Check-Valve
Cooling
Heating
Valve Packed 1/4″
Valve Packed 5/8″

2 Wiring Diagram

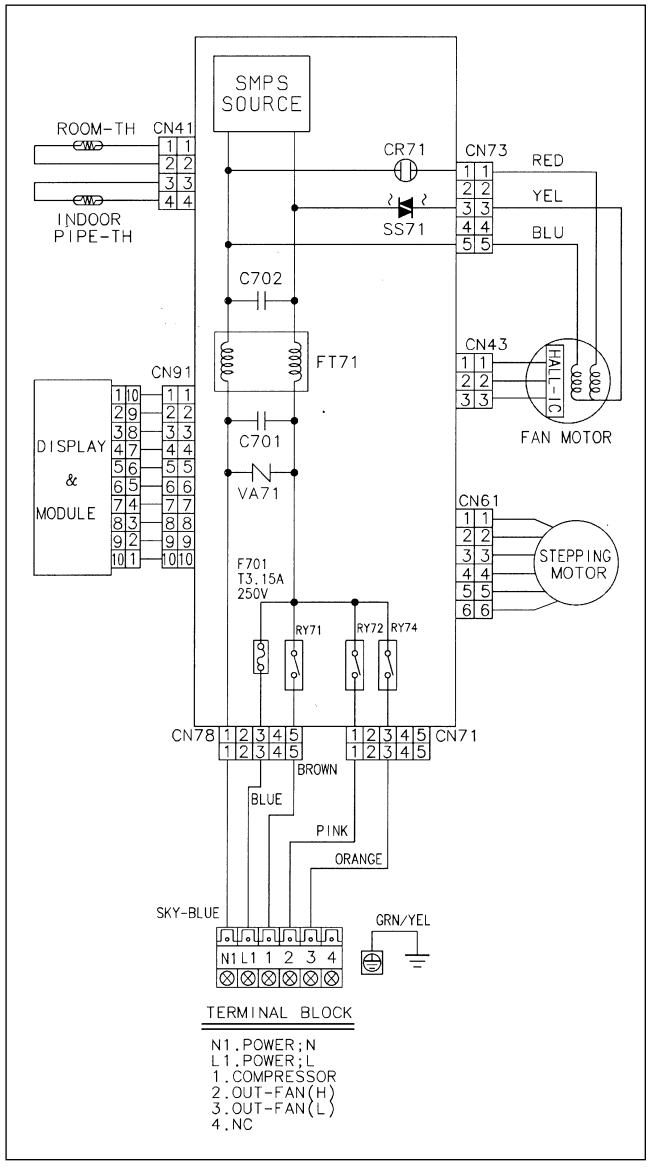
1 Cooling Only

INDOOR UNIT

7K/ 9K/ 12K

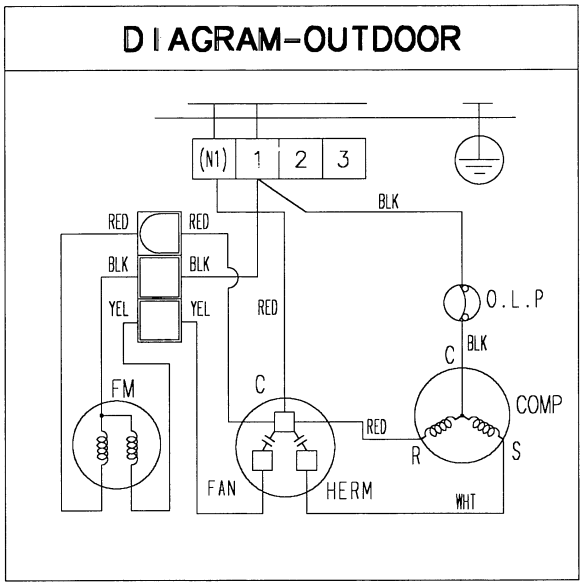


18K/ 24K

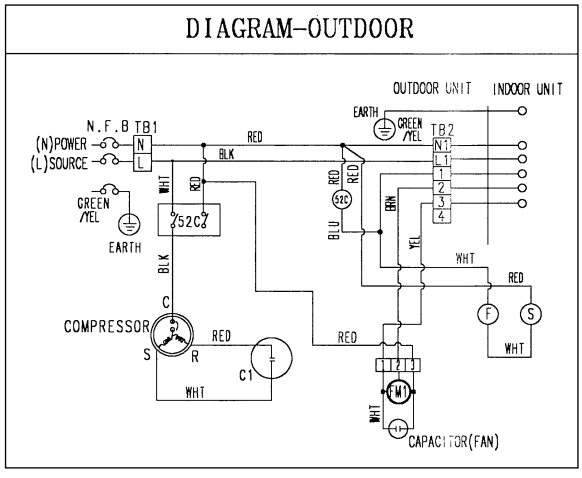


OUTDOOR UNIT

7K/ 9K/ 12K



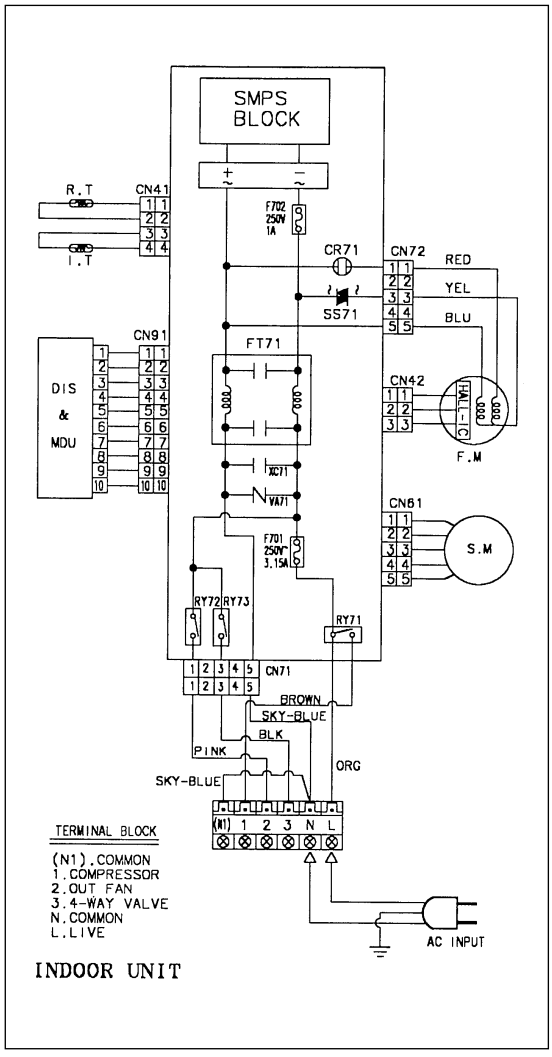
18K/ 24K



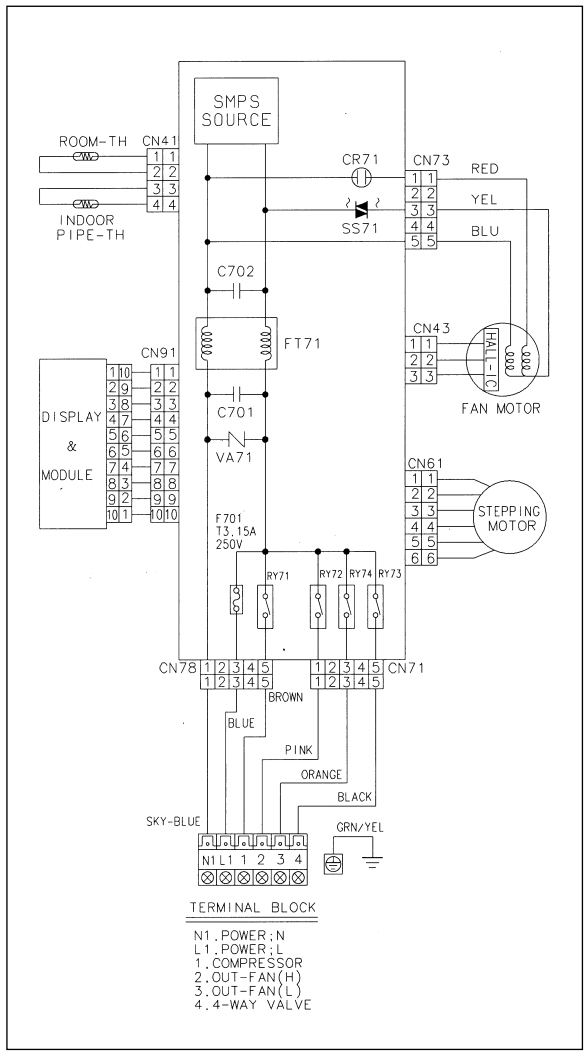
2 Heat Pump

INDOOR UNIT

7K/ 9K/ 12K

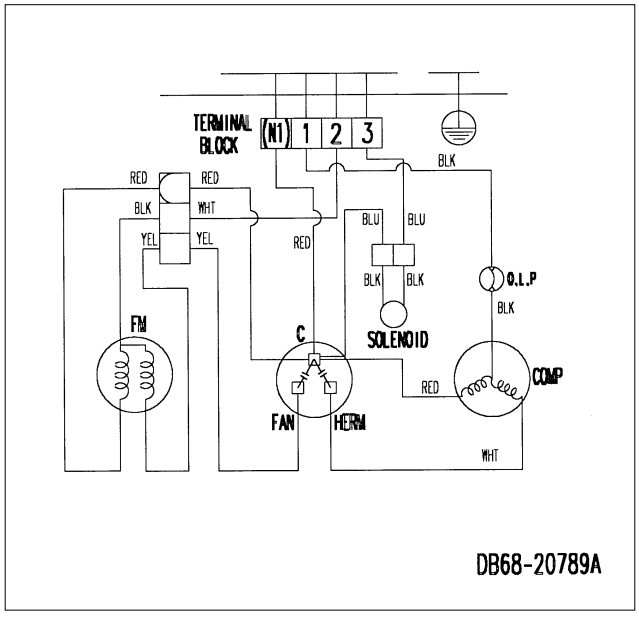


18K/ 24K

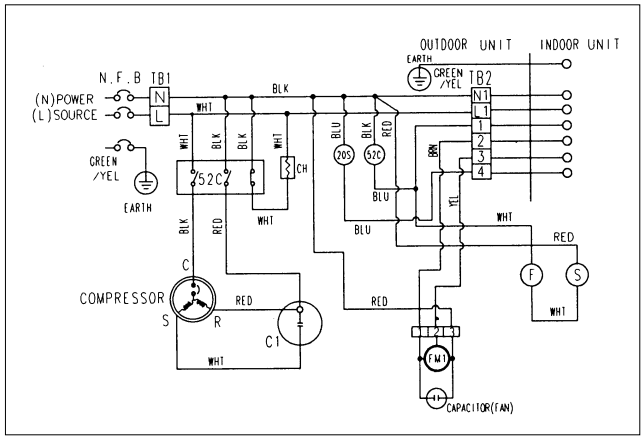


OUTDOOR UNIT

7K/ 9K/ 12K

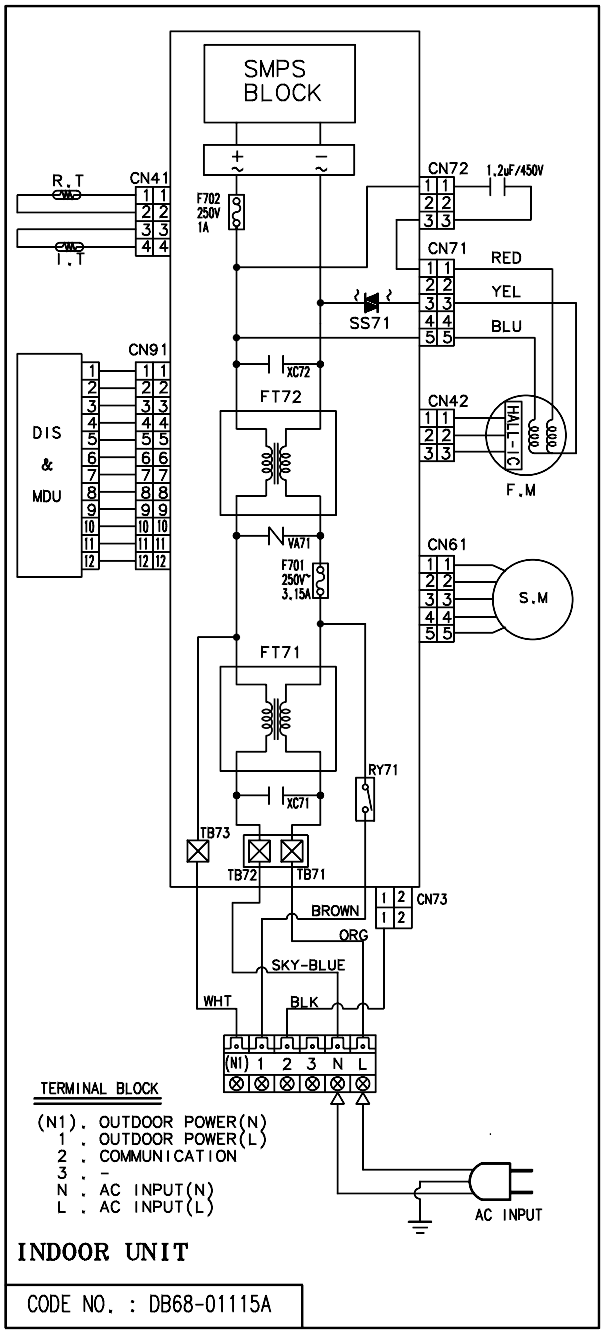


18K/ 24K



3 Inverter

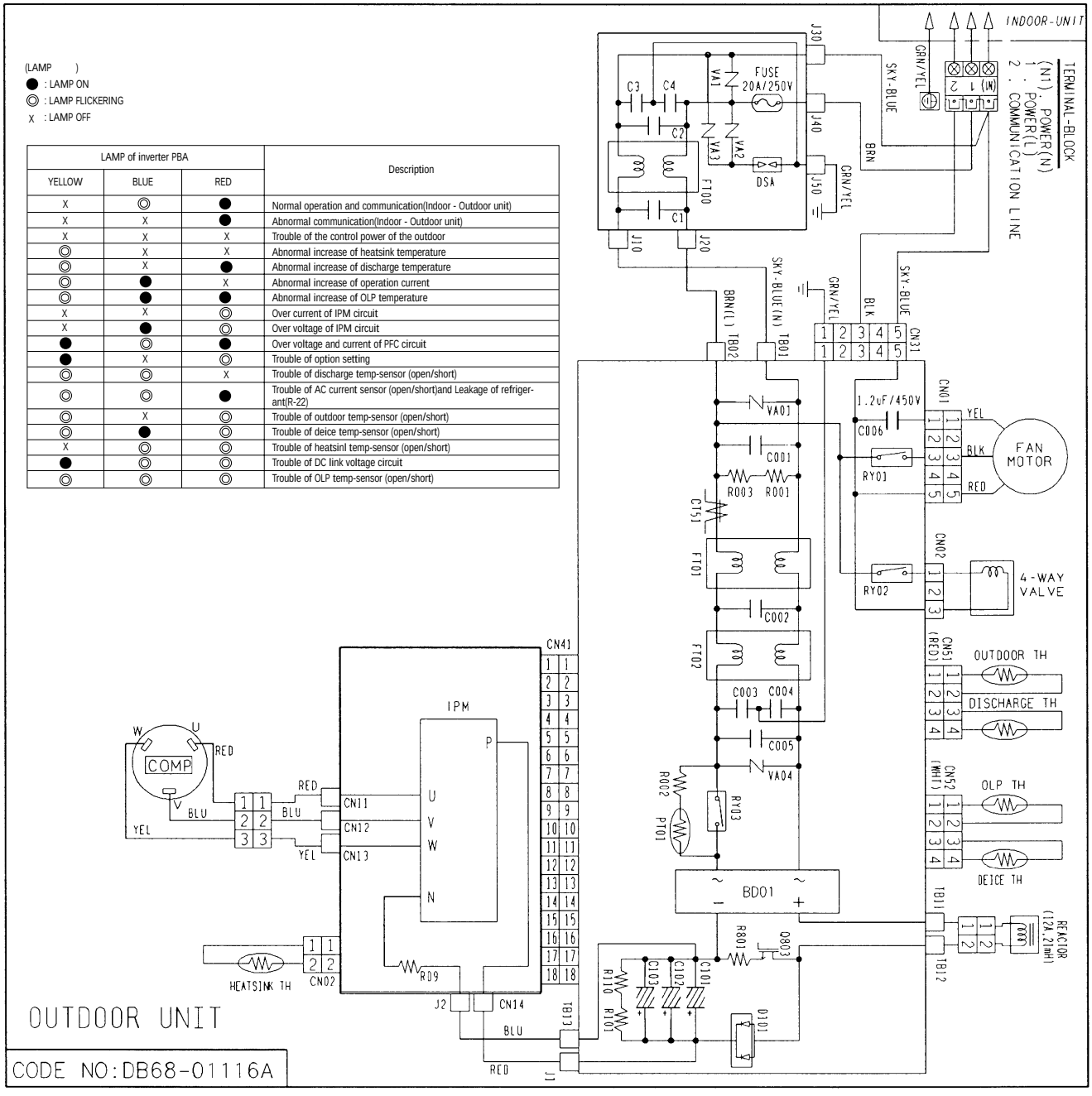
INDOOR UNIT



OUTDOOR UNIT

(LAMP)
● : LAMP ON
◎ : LAMP FLICKERING
X : LAMP OFF

LAMP of inverter PBA			Description
YELLOW	BLUE	RED	
X	◎	●	Normal operation and communication(Indoor - Outdoor unit)
X	X	●	Abnormal communication(Indoor - Outdoor unit)
X	X	X	Trouble of the control power of the outdoor
◎	X	X	Abnormal increase of heatsink temperature
◎	X	●	Abnormal increase of discharge temperature
◎	●	X	Abnormal increase of operation current
◎	●	●	Abnormal increase of OLP temperature
X	X	◎	Over current of IPM circuit
X	●	◎	Over voltage of IPM circuit
●	◎	●	Over voltage and current of PFC circuit
●	X	◎	Trouble of option setting
◎	◎	X	Trouble of discharge temp-sensor (open/short)
◎	◎	●	Trouble of AC current sensor (open/short)and Leakage of refriger-ant(R-22)
◎	X	◎	Trouble of outdoor temp-sensor (open/short)
◎	●	◎	Trouble of deice temp-sensor (open/short)
X	◎	◎	Trouble of heatsinl temp-sensor (open/short)
●	◎	◎	Trouble of DC link voltage circuit
◎	◎	◎	Trouble of OLP temp-sensor (open/short)



Troubleshooting

Troubleshooting for Non Inverter Cooling Only(7K/9K/12K) 101

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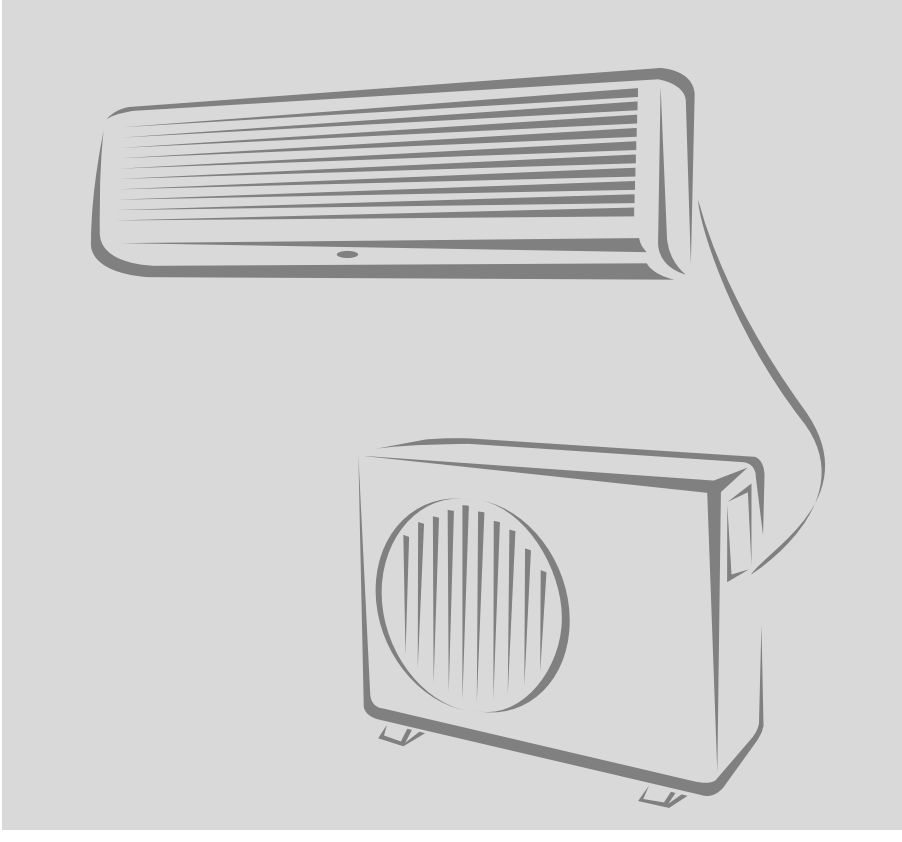
Troubleshooting for Inverter 125

Set up the Model Option 134



1 Troubleshooting for Non Inverter Cooling Only (7K/ 9K/ 12K)

1 Items to be checked first

1) The input voltage should be rating voltage ±10% range.
The airconditioner may not operate properly if the voltage is out of this range.

2) Is the link cable linking the indoor unit and the outdoor unit linked properly?
The indoor unit and the outdoor unit shall be linked by 5 cables.
Check the terminals if the indoor unit and outdoor unit are properly linked by the same number of cables.
Otherwise the airconditioner may not operate properly.

3) When a problem occurs due to the contents illustrated in the table below it is a symptom not related to the malfunction of the airconditioner.

NO	Operation of air conditioner	Explanation
1	The STD operation indication LED blinks when a power plug of the indoor unit is plugged in for the first time.	It indicates power is on. The LED stops blinking if the operation ON/OFF button on the remote control unit is pushed.
2	In a COOL operation mode, the compressor does not operate at a room temperature higher than the setting temperature that the IN DOOR FAN should operate.	In happens after a delay of 3 minutes when the compressor is reoperated. The same phenomenon occurs when a power is on. As a phenomenon that the compressor is reoperated after a delay of 3 minutes, the indoor fan is adjusted automatically with reference to a temperature of the air blew
3	Fan speed setting is not allowed in AUTO or DRY mode.	The speed of the indoor fan is set to LL in DRY mode. Fan speed is 5 steps is selected automatically in AUTO mode.
4	Compressor stops operation intermittently in DRY mode.	Compressor operation is controlled automatically in DRY mode depending on the room temperature and humidity.
5	Timer LED only of the indoor unit lights up and the air conditioner does not operate.	Timer is being activated and the unit is in ready mode. The unit operates normally if the timer operation is cancelled.
6	The compressor stops intermittently in a COOL mode or DRY mode, and fan speed of the indoor unit decreases.	The compressor stops intermittently or the fan speed of the indoor unit decreases to prevent inside/outside air frozen depending on the inside/outside air temperature.

4) Indoor unit observes operation condition of the air conditioner, and displays self diagnosis details on the display panel.

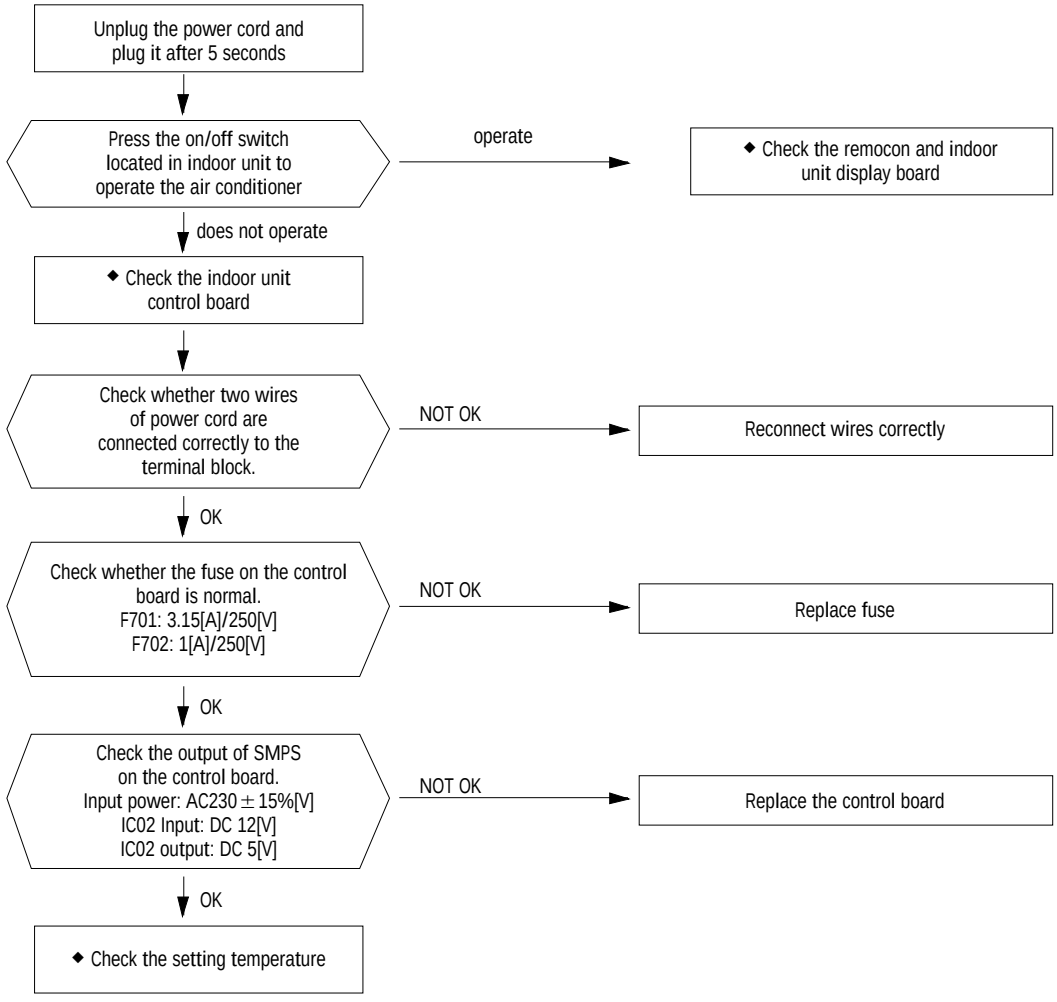
NO	Display	Self Diagnosis
1	STD LED blinking (1Hz)	Restore from power failure (input initial power)
2	TIMER LED blinking (1Hz)	Indoor unit Room sensor Error (open or short)
3	STD and TIMER LED blinking (1Hz)	Indoor unit heat exchanger temperature sensor Error (open or short)
4	NATURE LED blinking (1Hz)	Indoor fan malfunctioning (for speed is below 450rpm)

2 Fault Diagnosis by Symptom

◆ No Power (completely dead)-Initial diagnosis

1) Checklist :
   (1) Is input voltage normal?
   (2) Is AC power linked correctly?
   (3) Is output voltage of DC regulator IC KA7805 (IC02) normal? (4.5VDC-5.5VDC)

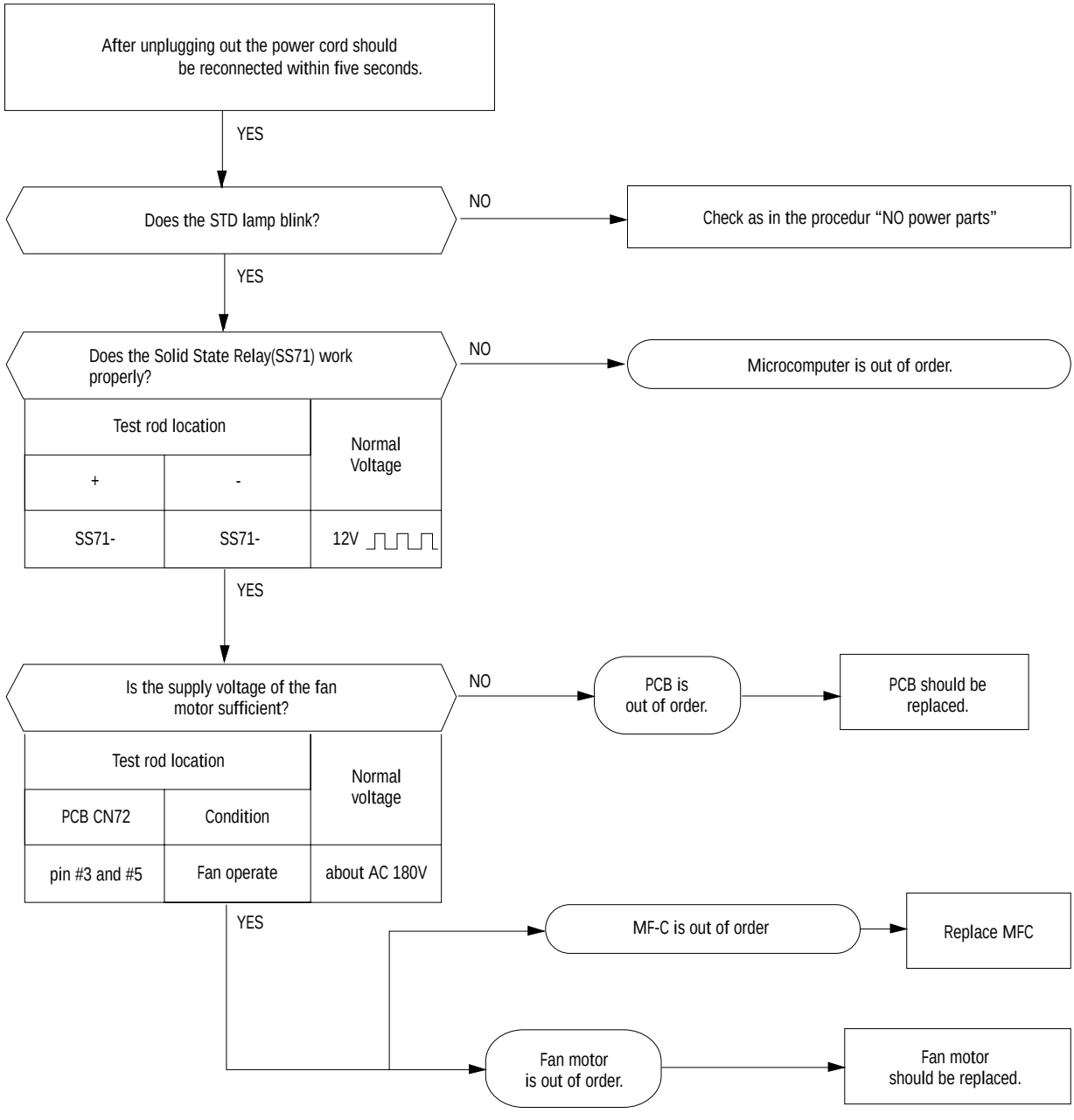
2) Troubleshooting procedure


Unplug the power cord and plug it after 5 seconds
Press the on/off switch located in indoor unit to operate the air conditioner
operate
◆ Check the remocon and indoor unit display board
does not operate
◆ Check the indoor unit control board
Check whether two wires of power cord are connected correctly to the terminal block.
NOT OK
Reconnect wires correctly
OK
Check whether the fuse on the control board is normal.
F701: 3.15[A]/250[V]
F702: 1[A]/250[V]
NOT OK
Replace fuse
OK
Check the output of SMPS on the control board.
Input power: AC230 ± 15%[V]
IC02 Input: DC 12[V]
IC02 output: DC 5[V]
NOT OK
Replace the control board
OK
◆ Check the setting temperature

◆ When the Indoor Unit Fan Does Not Operate. (Initial Diagnosis)

1) Checklist :
   (1) Is the indoor unit fan motor properly connected with the connector (CN72)?
   (2) Is the AC voltage correct?
   (3) Is HALL IC in indoor fan motor properly connected with the connector (CN42)?
   (4) Is the running capacitor (CR71) properly connected with PCB board?

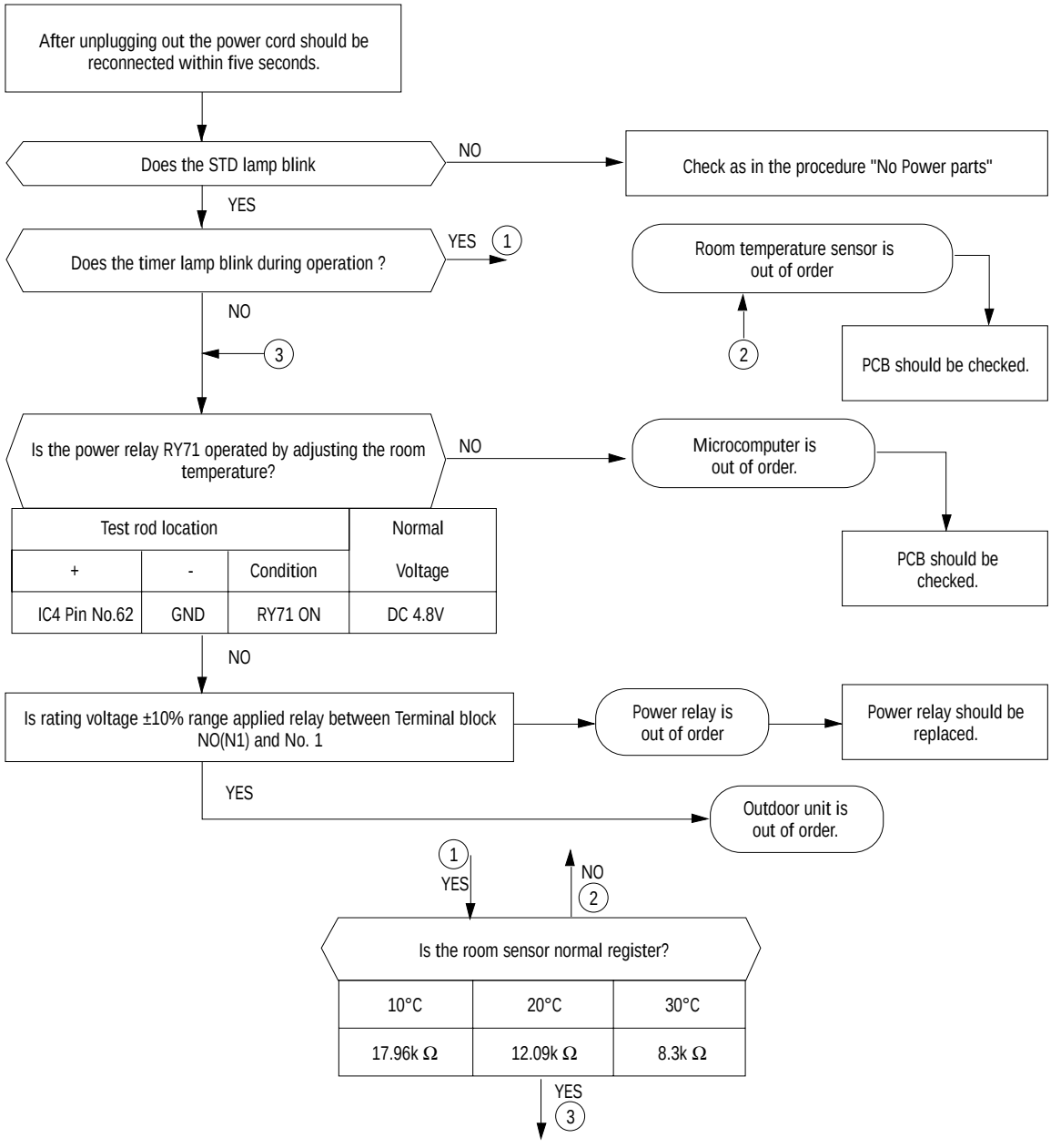
2) Troubleshooting procedure



◆ When the Outdoor Unit Does Not Operate. (Initial Diagnosis)

1) Checklist :
   (1) Is input voltage normal?
   (2) Is the set temperature of the remote control higher than room temperature in COOL mode?
   (3) Is the POWER IN connector (CN71) linked correctly?
   (4) Is the outdoor unit properly connected with the TERMINAL BLOCK connector((N1), 1)?

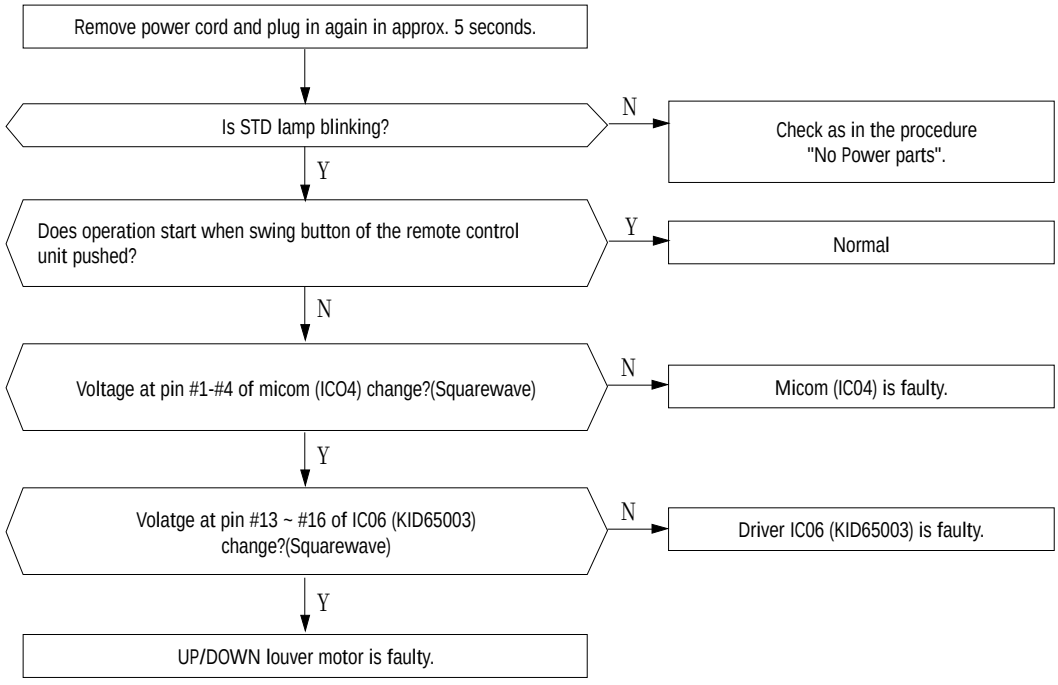
2) Troubleshooting procedure



◆ When the UP/DOWN Louver Moter Does Not Operate. (Initial Diagnosis)

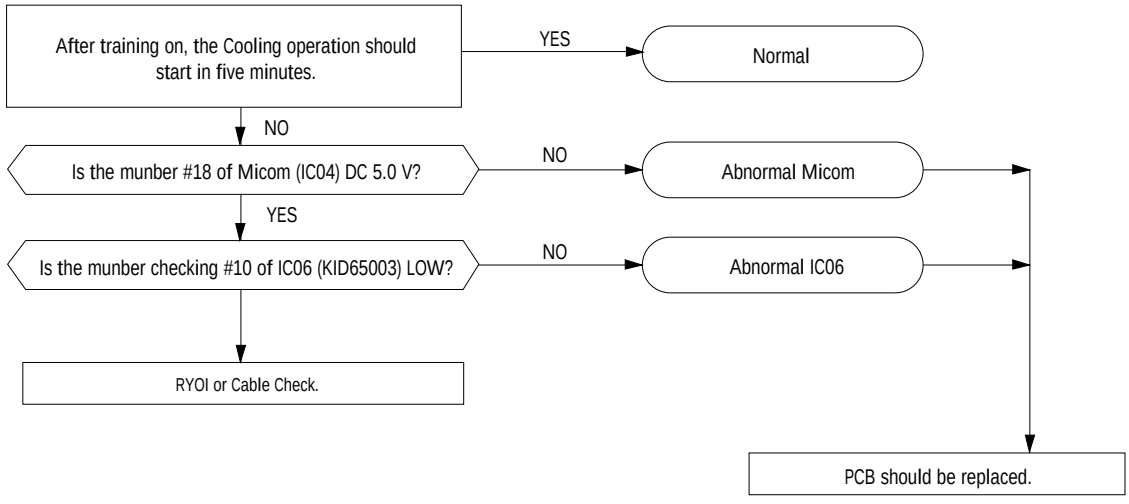
1) Checklist :
   (1) Is input voltage normal?
   (2) Is the UP/DOWN louver motor properly connected with the connector (CN61)?

2) Troubleshooting procedure


Remove power cord and plug in again in approx. 5 seconds.
Is STD lamp blinking?
N
Check as in the procedure "No Power parts".
Y
Does operation start when swing button of the remote control unit pushed?
Y
Normal
N
Voltage at pin #1-#4 of micom (ICO4) change?(Squarewave)
N
Micom (IC04) is faulty.
Y
Volatge at pin #13 ~ #16 of IC06 (KID65003) change?(Squarewave)
N
Driver IC06 (KID65003) is faulty.
Y
UP/DOWN louver motor is faulty.

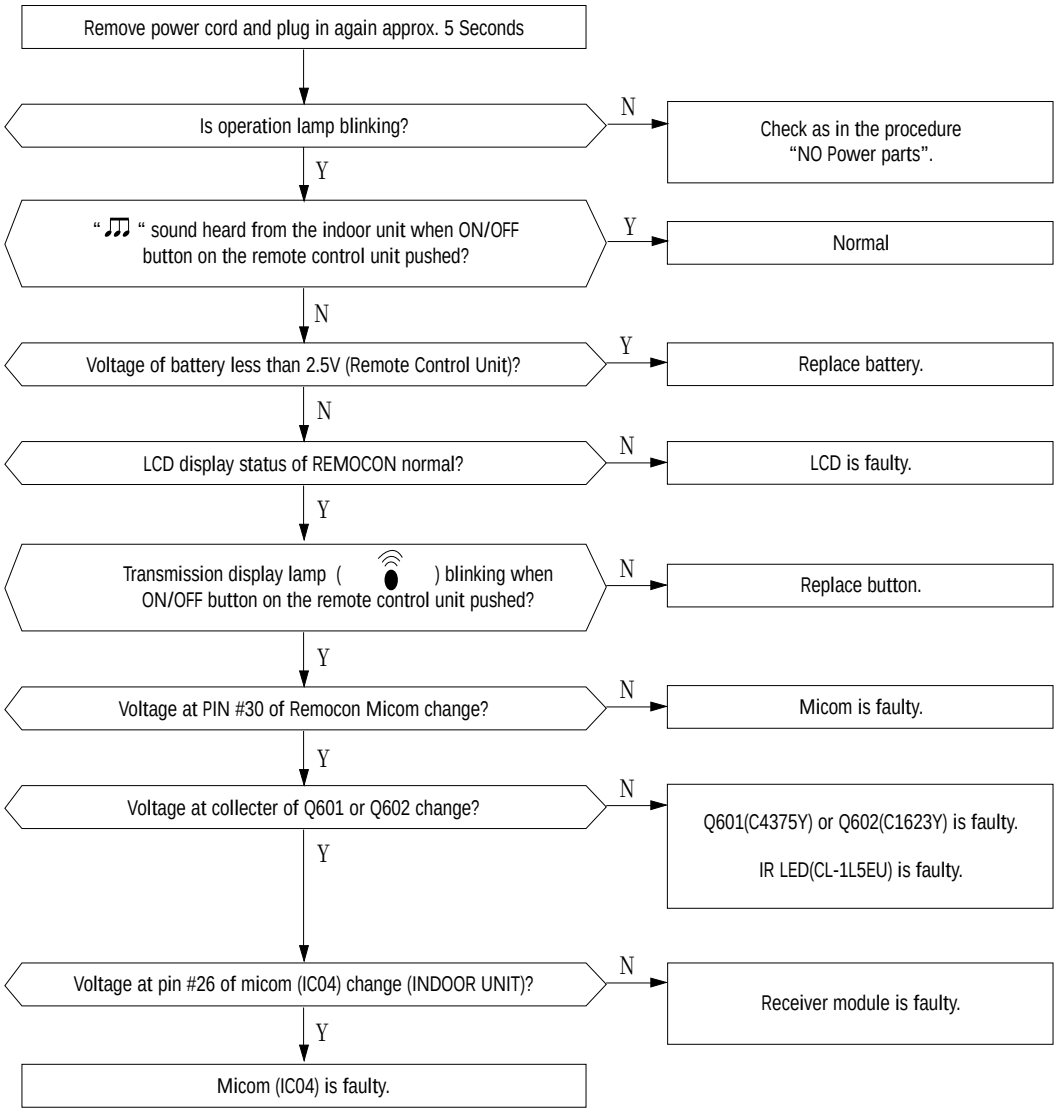
◆ In the mode, When there is no cool air current. Check this first;

(1) Is the set temperature of Remote Control lower than room temperature in Cool mode?
(2) Is the Indoor PCB properly connected with the CN71 connector?



◆ If Operation By Remote Control Unit Is Impossible. (Initial Diagnosis)

1) Troubleshooting procedure


Remove power cord and plug in again approx. 5 Seconds
Is operation lamp blinking?
N
Check as in the procedure "NO Power parts".
Y
" ♫ " sound heard from the indoor unit when ON/OFF button on the remote control unit pushed?
Y
Normal
N
Voltage of battery less than 2.5V (Remote Control Unit)?
Y
Replace battery.
N
LCD display status of REMOCON normal?
N
LCD is faulty.
Y
Transmission display lamp ( ) blinking when ON/OFF button on the remote control unit pushed?
N
Replace button.
Y
Voltage at PIN #30 of Remocon Micom change?
N
Micom is faulty.
Y
Voltage at collecter of Q601 or Q602 change?
N
Q601(C4375Y) or Q602(C1623Y) is faulty.
IR LED(CL-1L5EU) is faulty.
Y
Voltage at pin #26 of micom (IC04) change (INDOOR UNIT)?
N
Receiver module is faulty.
Y
Micom (IC04) is faulty.

2 Troubleshooting for Non Inverter Heat Pump (7K/9K/ 12K)

1 Items to be checked first

1) The input voltage should be rating voltage ±10% range.
The airconditioner may not operate properly if the voltage is out of this range.

2) Is the link cable linking the indoor unit and the outdoor unit linked properly?
The indoor unit and the outdoor unit shall be linked by 5 cables.
Check the terminals if the indoor unit and outdoor unit are properly linked by the same number of cables.
Otherwise the airconditioner may not operate properly.

3) When a problem occurs due to the contents illustrated in the table below it is a symptom not related to the malfunction of the airconditioner.

NO	Operation of air conditioner	Explanation
1	The STD operation indication LED blinks when a power plug of the indoor unit is plugged in for the first time.	It indicates power is on. The LED stops blinking if the operation ON/OFF button on the remote control unit is pushed.
2	In a COOL operation mode, the compressor does not operate at a room temperature higher than the setting temperature that the IN DOOR FAN should operate. In a HEAT operation mode, the compressor does not operate at a room temperature lower than the setting temperature that indoor fan should operate.	In happens after a delay of 3 minutes when the compressor is reoperated. The same phenomenon occurs when a power is on. As a phenomenon that the compressor is reoperated after a delay of 3 minutes, the indoor fan is adjusted automatically with reference to a temperature of the air blew
3	Fan speed setting is not allowed in AUTO or DRY mode.	The speed of the indoor fan is set to LL in DRY mode. Fan speed is 5 steps is selected automatically in AUTO mode.
4	Compressor stops operation intermittently in DRY mode.	Compressor operation is controlled automatically in DRY mode depending on the room temperature and humidity.
5	Compressor of the outdoor unit is operating although it is turned off in a HEAT mode.	When the unit is turned off while de-ice is activated, the compressor continues operation for up to 9 minutes (maximum) until the deice is completed.
6	Timer LED only of the indoor unit lights up and the air conditioner does not operate.	Timer is being activated and the unit is in ready mode. The unit operates normally if the timer operation is cancelled.
7	The compressor and indoor fan stop intermittently in HEAT mode.	The compressor and indoor fan stop intermittently if room temperature exceeds a setting temperature in order to protect the compressor from overheated air in a HEAT mode.
8	Indoor fan and outdoor fan stop operation intermittently in a HEAT mode.	The compressor operates in a reverse cycle to remove exterior ice in a HEAT mode, and indoor fan and outdoor fan do not operate intermittently for within 20% of the total heater operation
9	The compressor stops intermittently in a COOL mode or DRY mode, and fan speed of the indoor unit decreases.	The compressor stops intermittently or the fan speed of the indoor unit decreases to prevent inside/outside air frozen depending on the inside/outside air temperature.

4) Indoor unit observes operation condition of the air conditioner, and displays self diagnosis details on the display panel.

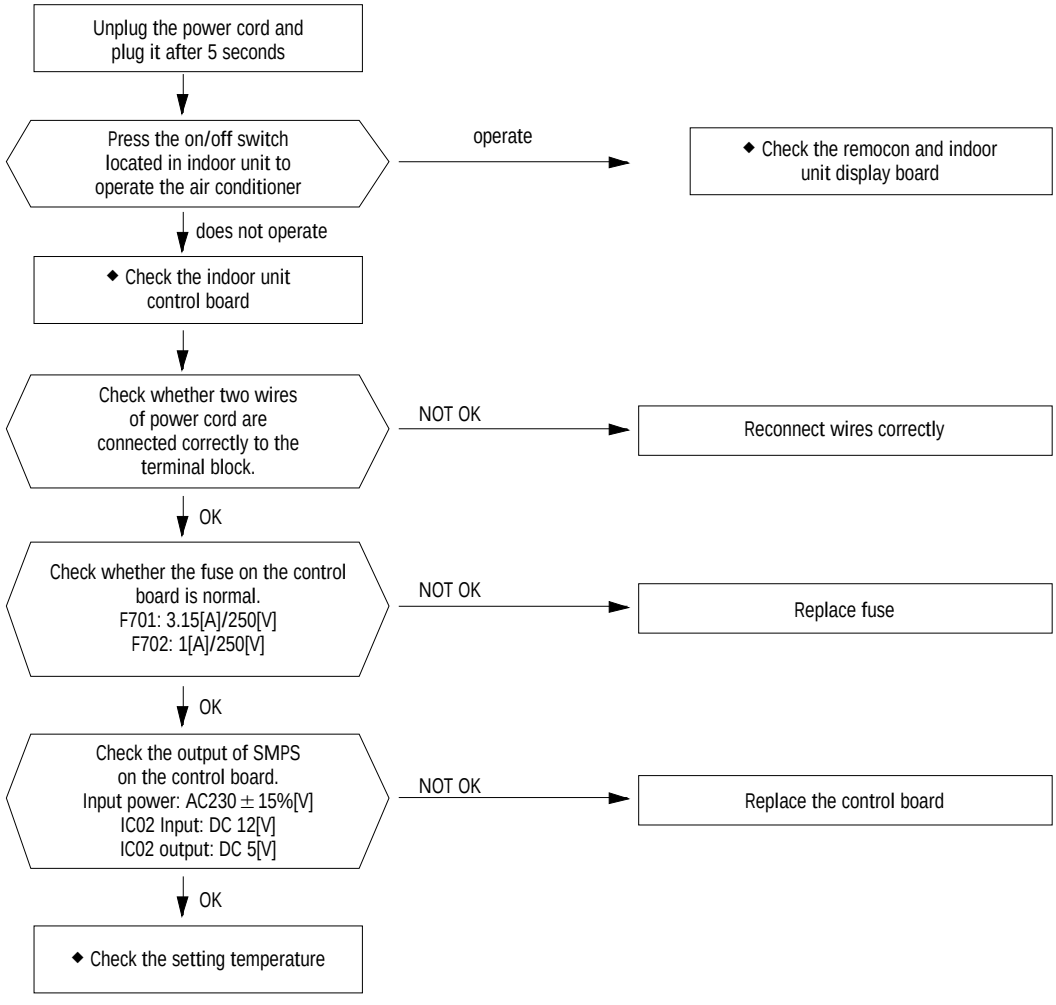
NO	Display	Self Diagnosis
1	STD LED blinking (1Hz)	Restore from power failure (input initial power)
2	TIMER LED blinking (1Hz)	Indoor unit Room sensor Error (open or short)
3	STD and TIMER LED blinking (1Hz)	Indoor unit heat exchanger temperature sensor Error (open or short)
4	NATURE LED blinking (1Hz)	Indoor fan malfunctioning (for speed is below 450rpm)

2 Fault Diagnosis by Symptom

◆ No Power (completely dead)-Initial diagnosis

1) Checklist :
   (1) Is input voltage normal?
   (2) Is AC power linked correctly?
   (3) Is output voltage of DC regulator IC KA7805 (IC02) normal? (4.5VDC-5.5VDC)

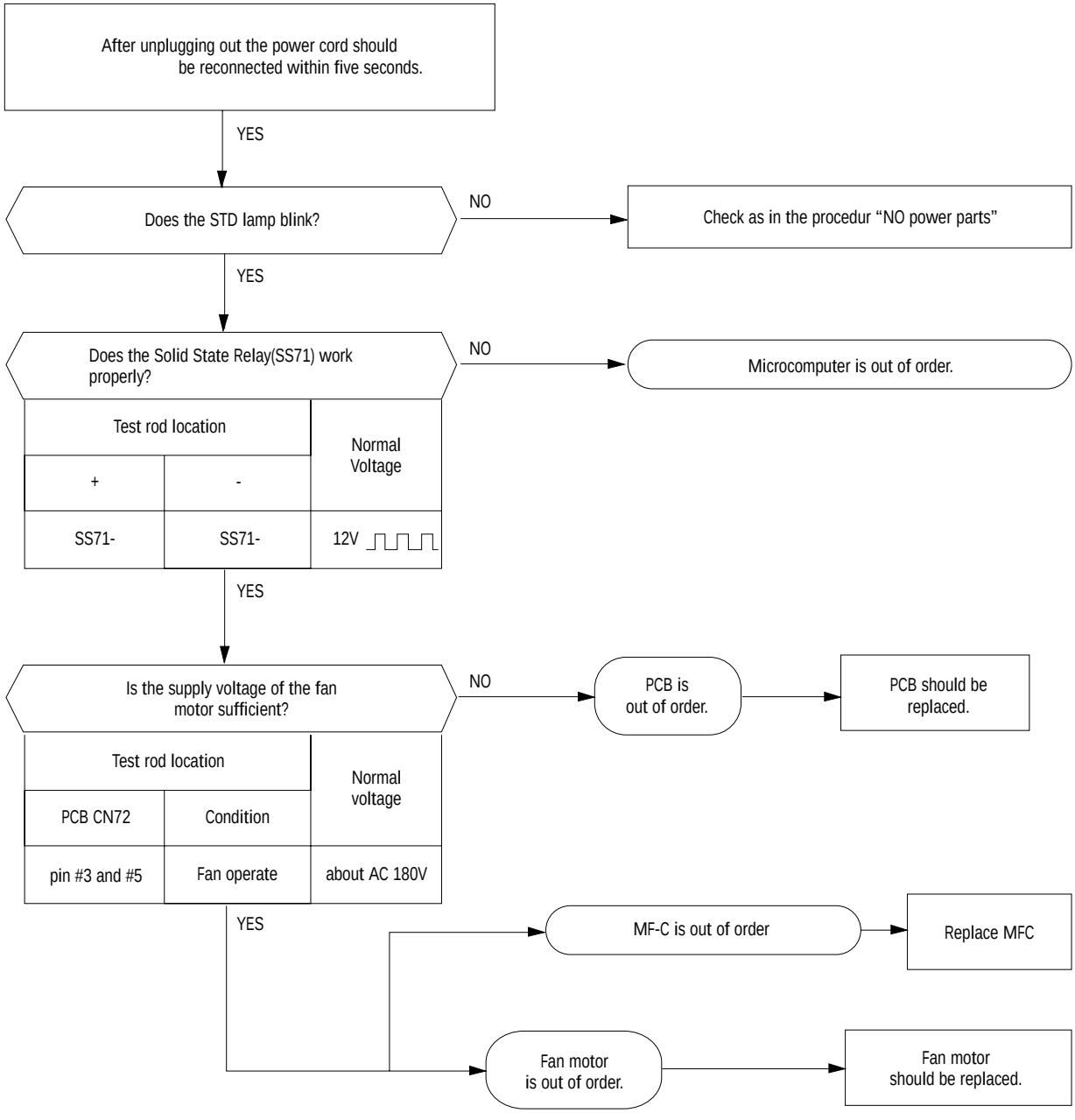
2) Troubleshooting procedure


Unplug the power cord and plug it after 5 seconds
Press the on/off switch located in indoor unit to operate the air conditioner
operate
◆ Check the remocon and indoor unit display board
does not operate
◆ Check the indoor unit control board
Check whether two wires of power cord are connected correctly to the terminal block.
NOT OK
Reconnect wires correctly
OK
Check whether the fuse on the control board is normal.
F701: 3.15[A]/250[V]
F702: 1[A]/250[V]
NOT OK
Replace fuse
OK
Check the output of SMPS on the control board.
Input power: AC230 ± 15%[V]
IC02 Input: DC 12[V]
IC02 output: DC 5[V]
NOT OK
Replace the control board
OK
◆ Check the setting temperature

◆ When the Indoor Unit Fan Does Not Operate. (Initial Diagnosis)

1) Checklist :
   (1) Is the indoor unit fan motor properly connected with the connector (CN72)?
   (2) Is the AC voltage correct?
   (3) Is HALL IC in indoor fan motor properly connected with the connector (CN42)?
   (4) Is the running capacitor (CR71) properly connected with PCB board?

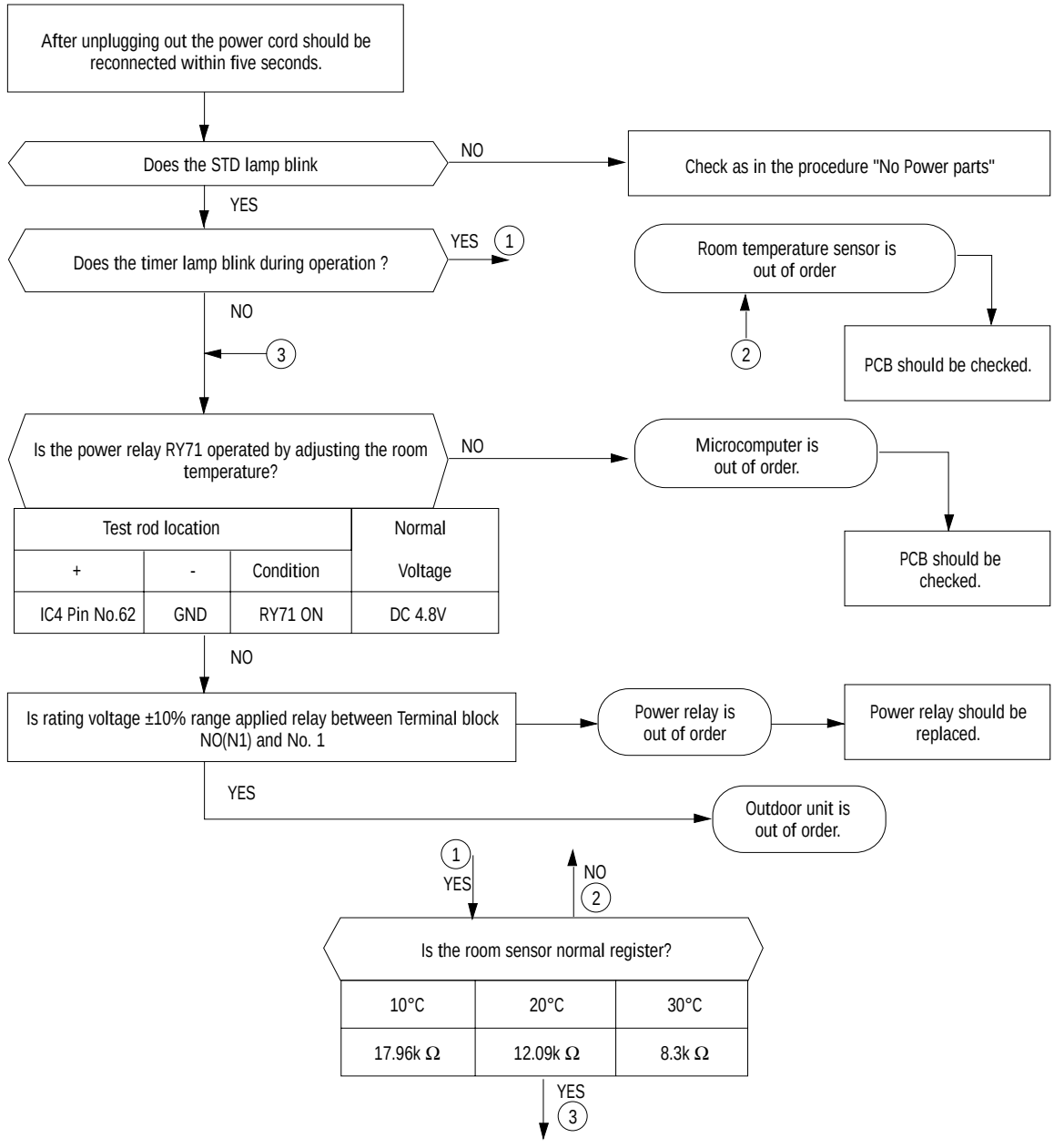
2) Troubleshooting procedure



◆ When the Outdoor Unit Does Not Operate. (Initial Diagnosis)

1) Checklist :
   (1) Is input voltage normal?
   (2) Is the set temperature of the remote control higher than room temperature in COOL mode?
   (3) Is the set temperature of the remote control lower than room temperature in HEAT mode?
   (4) Is the POWER IN connector (CN71) linked correctly?
   (5) Is the outdoor unit properly connected with the TERMINAL BLOCK connector((N1), 1, 2, 3)?

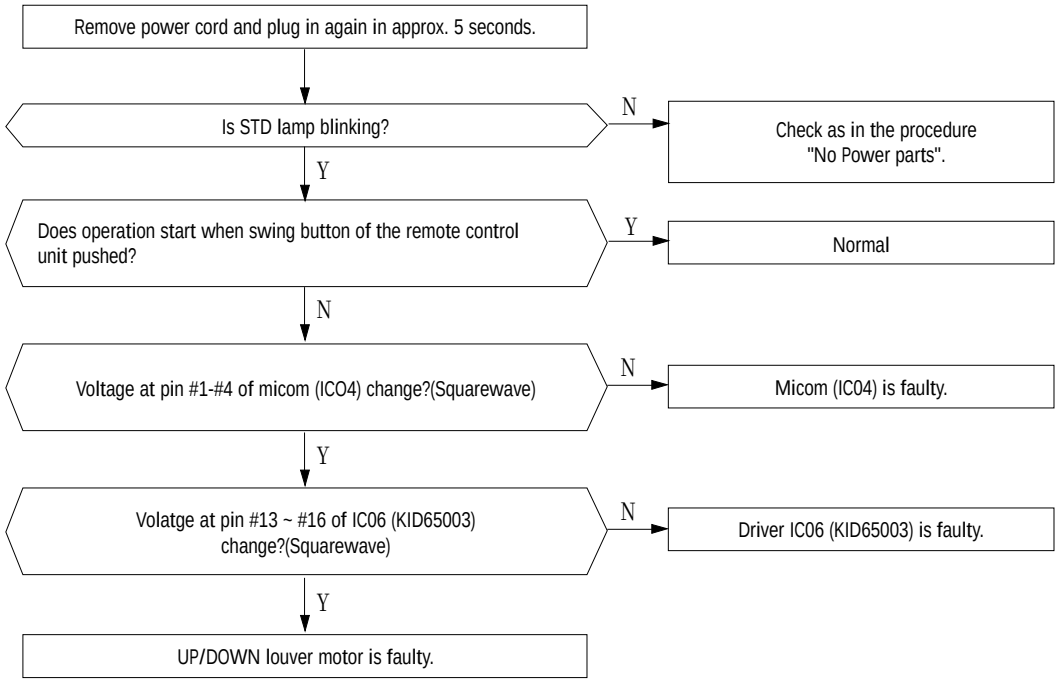
2) Troubleshooting procedure



◆ When the UP/DOWN Louver Moter Does Not Operate. (Initial Diagnosis)

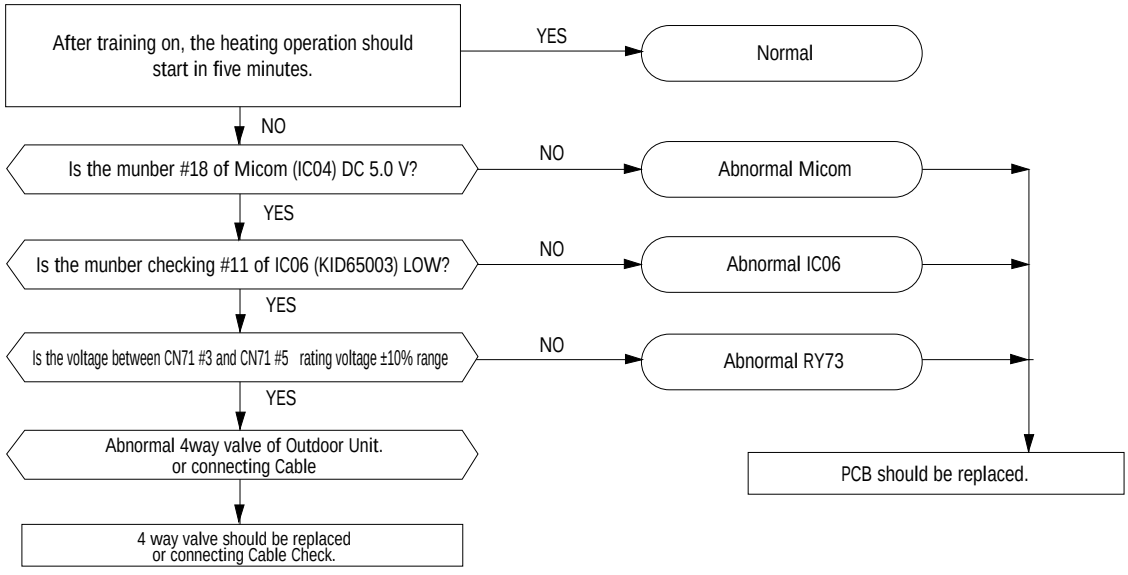
1) Checklist :
   (1) Is input voltage normal?
   (2) Is the UP/DOWN louver motor properly connected with the connector (CN61)?

2) Troubleshooting procedure


Remove power cord and plug in again in approx. 5 seconds.
Is STD lamp blinking?
N
Check as in the procedure "No Power parts".
Y
Does operation start when swing button of the remote control unit pushed?
Y
Normal
N
Voltage at pin #1-#4 of micom (ICO4) change?(Squarewave)
N
Micom (IC04) is faulty.
Y
Volatge at pin #13 ~ #16 of IC06 (KID65003) change?(Squarewave)
N
Driver IC06 (KID65003) is faulty.
Y
UP/DOWN louver motor is faulty.

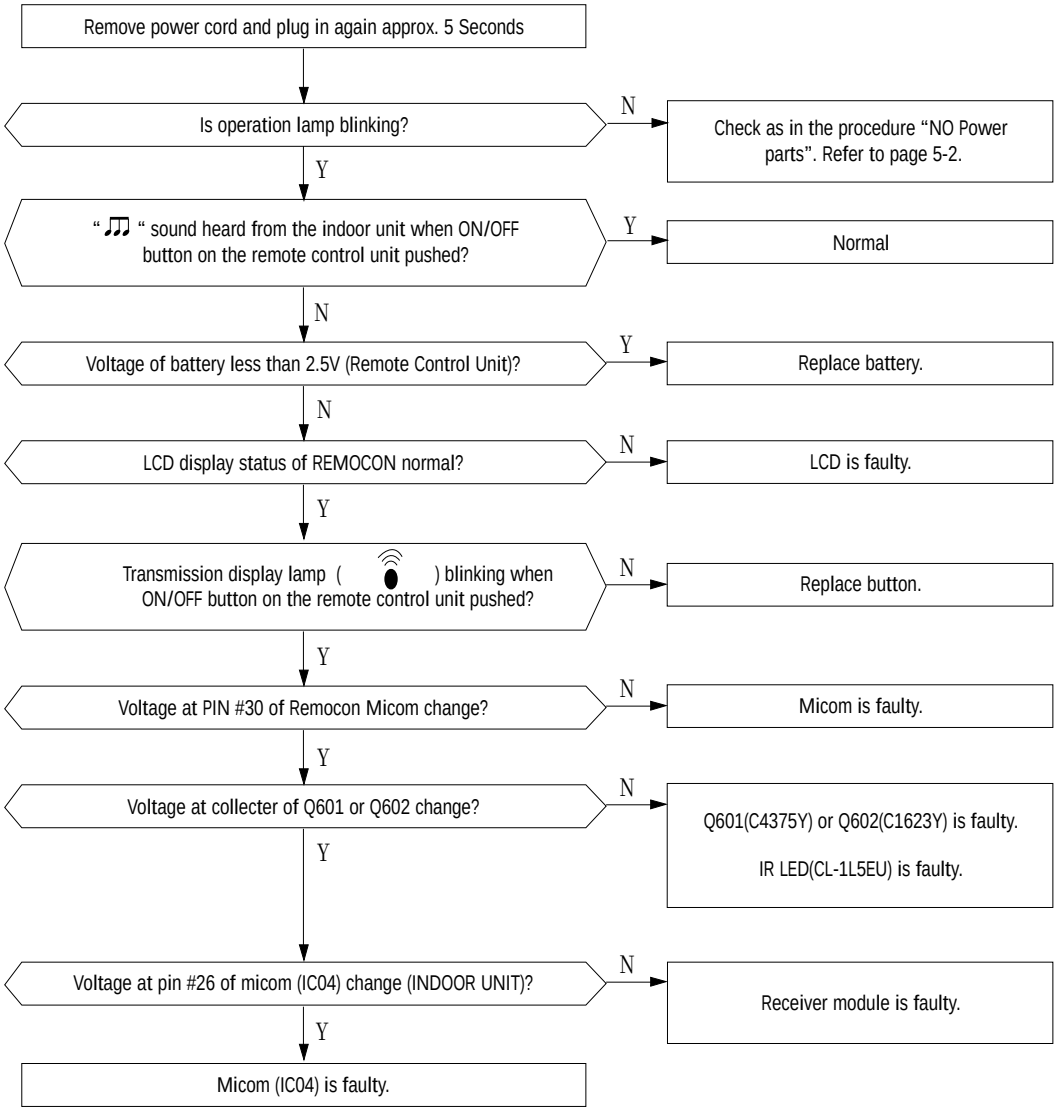
◆ In the mode, When there is no warm air current. Check this fist;

(1) Is the set temperature of Remote Control lower than room temperature in Heat mode?
(2) Is the Indoor PCB properly connected with the CN71 connector?


After training on, the heating operation should start in five minutes.
YES
Normal
NO
Is the munber #18 of Micom (IC04) DC 5.0 V?
NO
Abnormal Micom
YES
Is the munber checking #11 of IC06 (KID65003) LOW?
NO
Abnormal IC06
YES
Is the voltage between CN71 #3 and CN71 #5 rating voltage ±10% range
NO
Abnormal RY73
YES
Abnormal 4way valve of Outdoor Unit. or connecting Cable
PCB should be replaced.
4 way valve should be replaced or connecting Cable Check.

◆ If Operation By Remote Control Unit Is Impossible. (Initial Diagnosis)

1) Troubleshooting procedure


Remove power cord and plug in again approx. 5 Seconds
Is operation lamp blinking?
N
Check as in the procedure "NO Power parts". Refer to page 5-2.
Y
" ♫ " sound heard from the indoor unit when ON/OFF button on the remote control unit pushed?
Y
Normal
N
Voltage of battery less than 2.5V (Remote Control Unit)?
Y
Replace battery.
N
LCD display status of REMOCON normal?
N
LCD is faulty.
Y
Transmission display lamp ( ) blinking when ON/OFF button on the remote control unit pushed?
N
Replace button.
Y
Voltage at PIN #30 of Remocon Micom change?
N
Micom is faulty.
Y
Voltage at collecter of Q601 or Q602 change?
N
Q601(C4375Y) or Q602(C1623Y) is faulty.
IR LED(CL-1L5EU) is faulty.
Y
Voltage at pin #26 of micom (IC04) change (INDOOR UNIT)?
N
Receiver module is faulty.
Y
Micom (IC04) is faulty.

3 Troubleshooting for Non Inverter Cooling Only (18K/24K)

1 Items to be checked first

◆ Items to be checked first

1) The input voltage should be rating voltage ±10% range.
The airconditioner may not operate properly if the voltage is out of this range.

2) Is the link cable linking the indoor unit and the outdoor unit linked properly?
The indoor unit and the outdoor unit shall be linked by 6 cables.
Check the terminals if the indoor unit and outdoor unit are properly linked by the same number of cables.
Otherwise the airconditioner may not operate properly.

3) When a problem occurs due to the contents illustrated in the table below it is a symptom not related to the malfunction of the airconditioner.

NO	Operation of air conditioner	Explanation
1	The STD operation indication LED blinks when a power plug of the indoor unit is plugged in for the first time.	It indicates power is on. The LED stops blinking if the operation ON/OFF button on the remote control unit is pushed.
2	In a COOL operation mode, the compressor does not operate at a room temperature higher than the setting temperature that the IN DOOR FAN should operate.	In happens after a delay of 3 minutes when the compressor is reoperated. The same phenomenon occurs when a power is on. As a phenomenon that the compressor is reoperated after a delay of 3 minutes, the indoor fan is adjusted automatically with reference to a temperature of the air blew
3	Fan speed setting is not allowed in AUTO or DRY mode.	The speed of the indoor fan is set to LL in DRY mode. Fan speed is 5 steps is selected automatically in AUTO mode.
4	Compressor stops operation intermittently in DRY mode.	Compressor operation is controlled automatically in DRY mode depending on the room temperature and humidity.
5	The compressor stops intermittently in a COOL mode or DRY mode, and fan speed of the indoor unit decreases.	The compressor stops intermittently or the fan speed of the indoor unit decreases to prevent inside/outside air frozen depending on the inside/outside air temperature.

4) Indoor unit observes operation condition of the air conditioner, and displays self diagnosis details on the display panel.

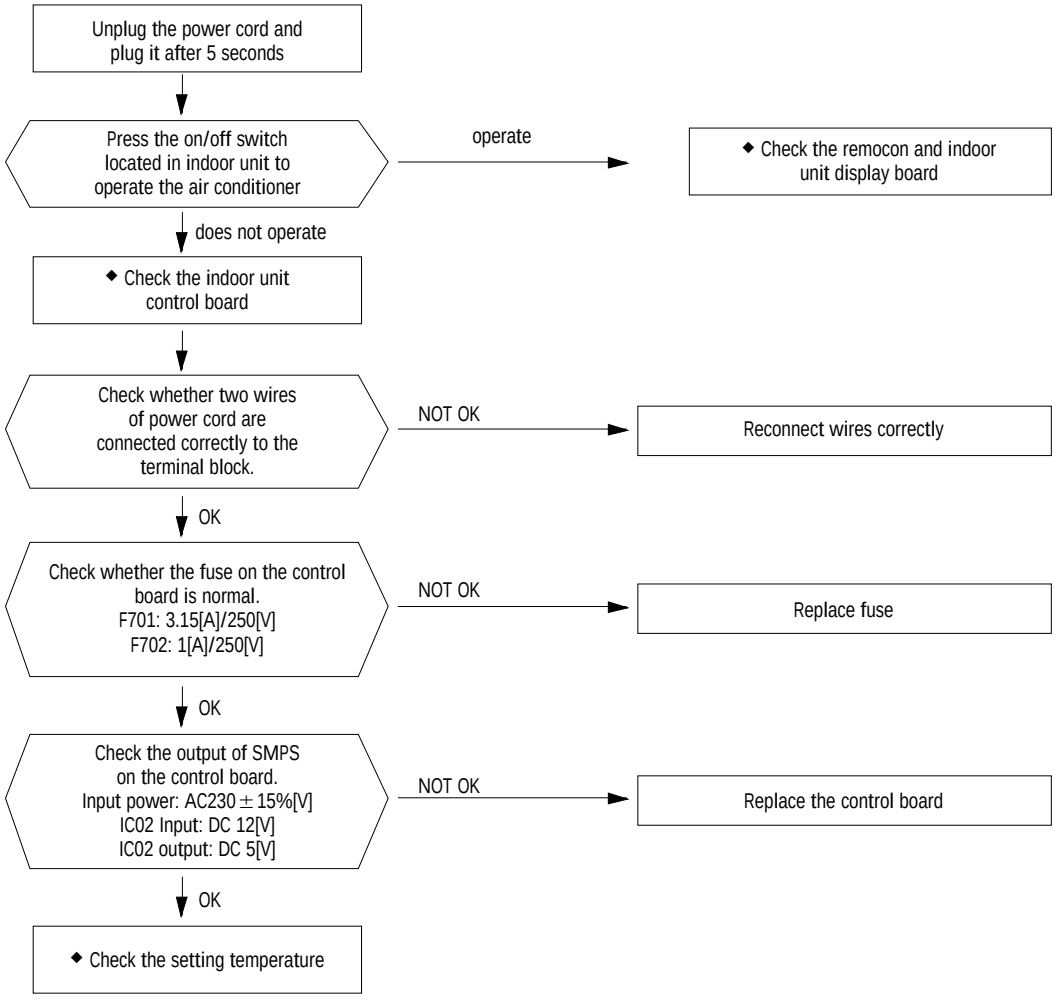
NO	Display	Self Diagnosis
1	STD LED blinking (1Hz)	Restore from power failure (input initial power)
2	TIMER LED blinking (1Hz)	Indoor unit Room sensor Error (open or short)
3	STD and TIMER LED blinking (1Hz)	Indoor unit heat exchanger temperature sensor Error (open or short)
4	Nature LED blinking (1Hz)	Indoor fan malfunctioning (for speed is below 450rpm)
5	STD, Nature and TIMER LED blinking(1Hz)	EEPROM Error
6	All LED blinking(1Hz)	Option Error(option wasn't set up or option data error)

2 Fault Diagnosis by Symptom

◆ No Power (completely dead)-Initial diagnosis

1) Checklist :
   (1) Is input voltage normal? the rating voltage ±10% range.
   (2) Is AC power linked correctly?
   (3) Are connections between primary side, secondary side of the power transformer and PCB good.
   (4) Is input voltage of DC regulator IC KA7805 (IC02) normal? (11VDC-12.5VDC)
   (5) Is output voltage of DC regulator IC KA7805 (IC02) normal? (4.5VDC-5.5VDC)

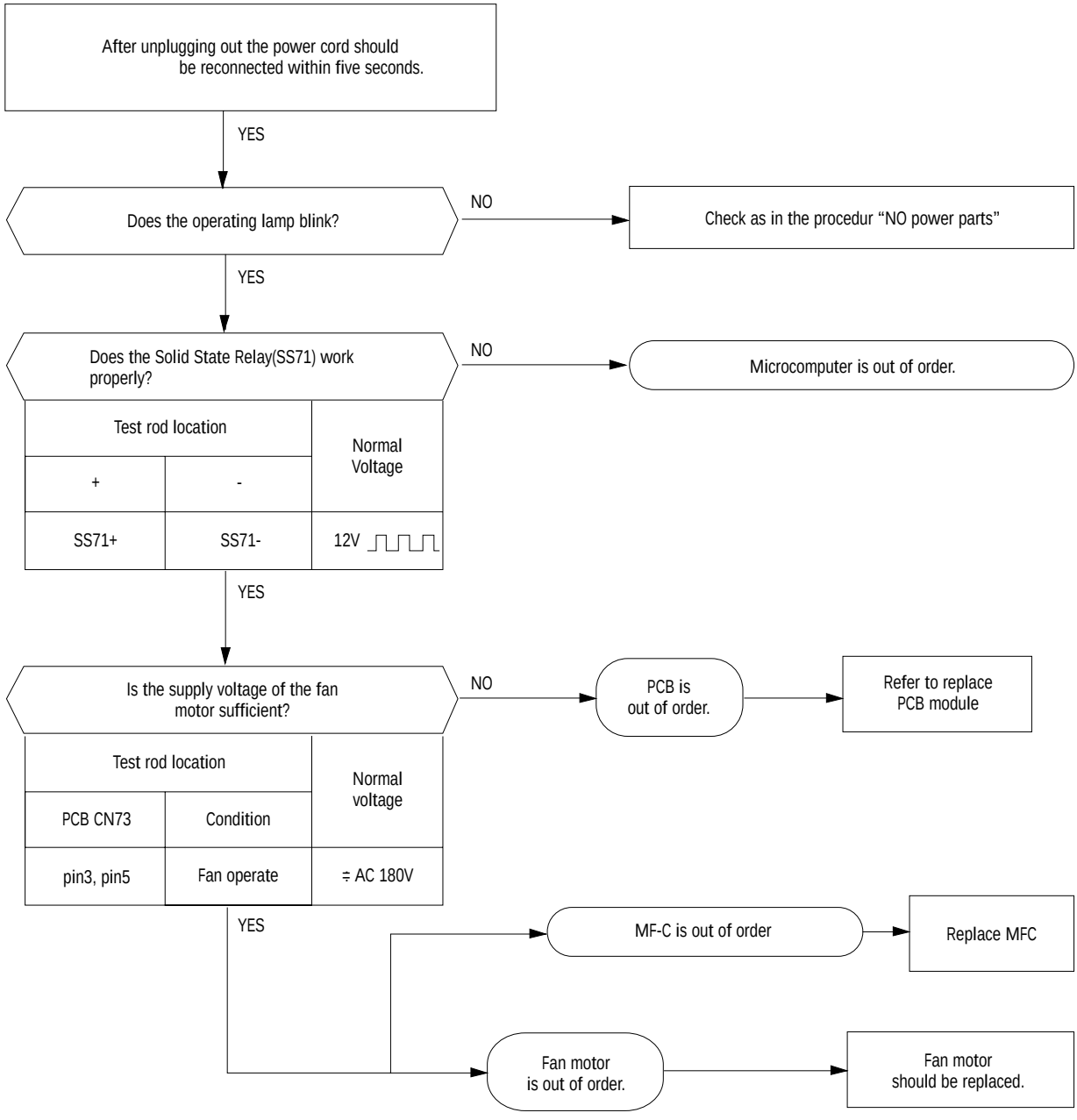
2) Troubleshooting procedure


Unplug the power cord and plug it after 5 seconds
Press the on/off switch located in indoor unit to operate the air conditioner
operate
◆ Check the remocon and indoor unit display board
does not operate
◆ Check the indoor unit control board
Check whether two wires of power cord are connected correctly to the terminal block.
NOT OK
Reconnect wires correctly
OK
Check whether the fuse on the control board is normal.
F701: 3.15[A]/250[V]
F702: 1[A]/250[V]
NOT OK
Replace fuse
OK
Check the output of SMPS on the control board.
Input power: AC230 ± 15%[V]
IC02 Input: DC 12[V]
IC02 output: DC 5[V]
NOT OK
Replace the control board
OK
◆ Check the setting temperature

◆ When the Indoor Unit Fan Does Not Operate. (Initial Diagnosis)

1) Checklist :
   (1) Is the indoor unit fan motor properly connected with the connector (CN73)?
   (2) Is the AC voltage correct?
   (3) Is HALL IC in indoor fan motor properly connected with the connector (CN43)?
   (4) Is the running capacitor properly connected with the solder part of the PCB?

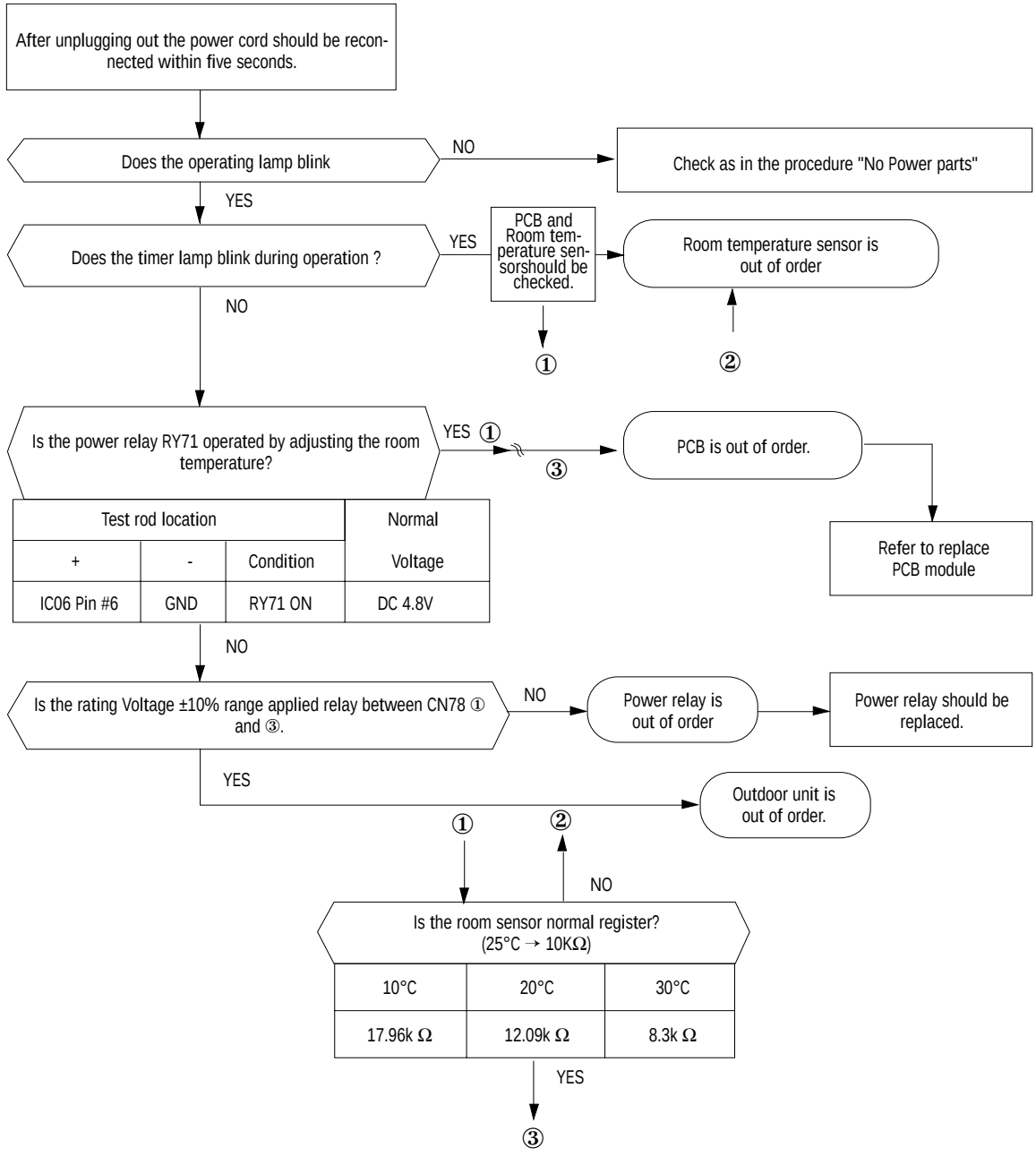
2) Troubleshooting procedure



◆ When the Outdoor Unit Does Not Operate. (Initial Diagnosis)

1) Checklist :
   (1) Is input voltage normal? (rating voltage ±10% range)
   (2) Is the set temperature of the remote control higher than room temperature in COOL mode?
   (3) Is the set temperature of the remote control lower than room temperature in HEAT mode?
   (4) Is the POWER IN connector (CN78) linked correctly?
   (5) Is the outdoor unit properly connected with the TERMINAL BLOCK connector(6P)?

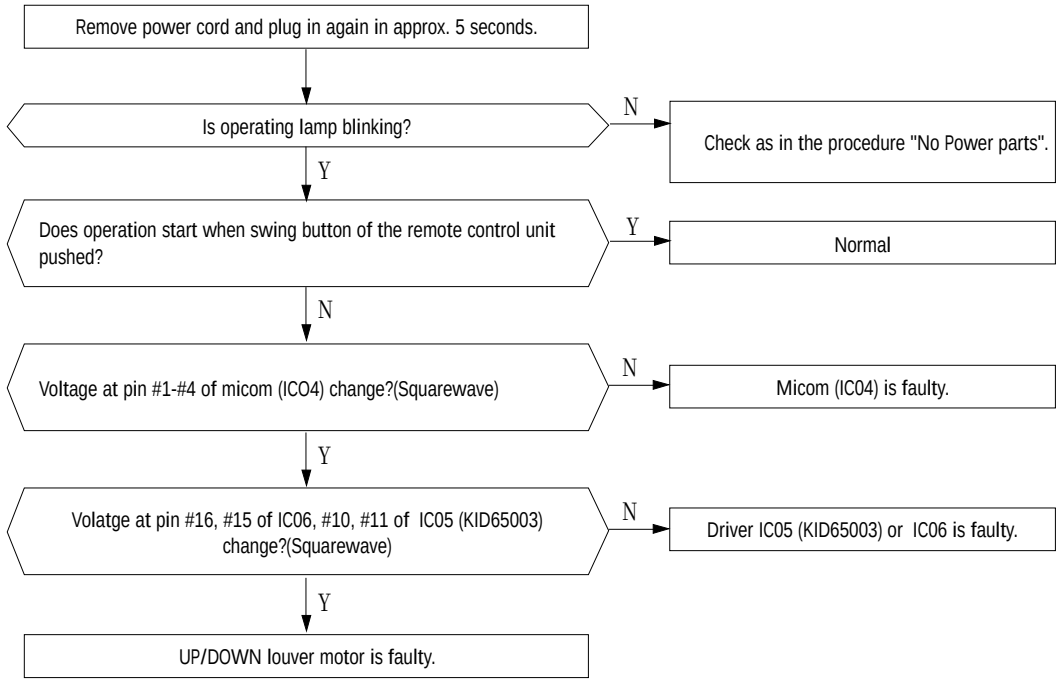
2) Troubleshooting procedure



◆ When the UP/DOWN Louver Moter Does Not Operate. (Initial Diagnosis)

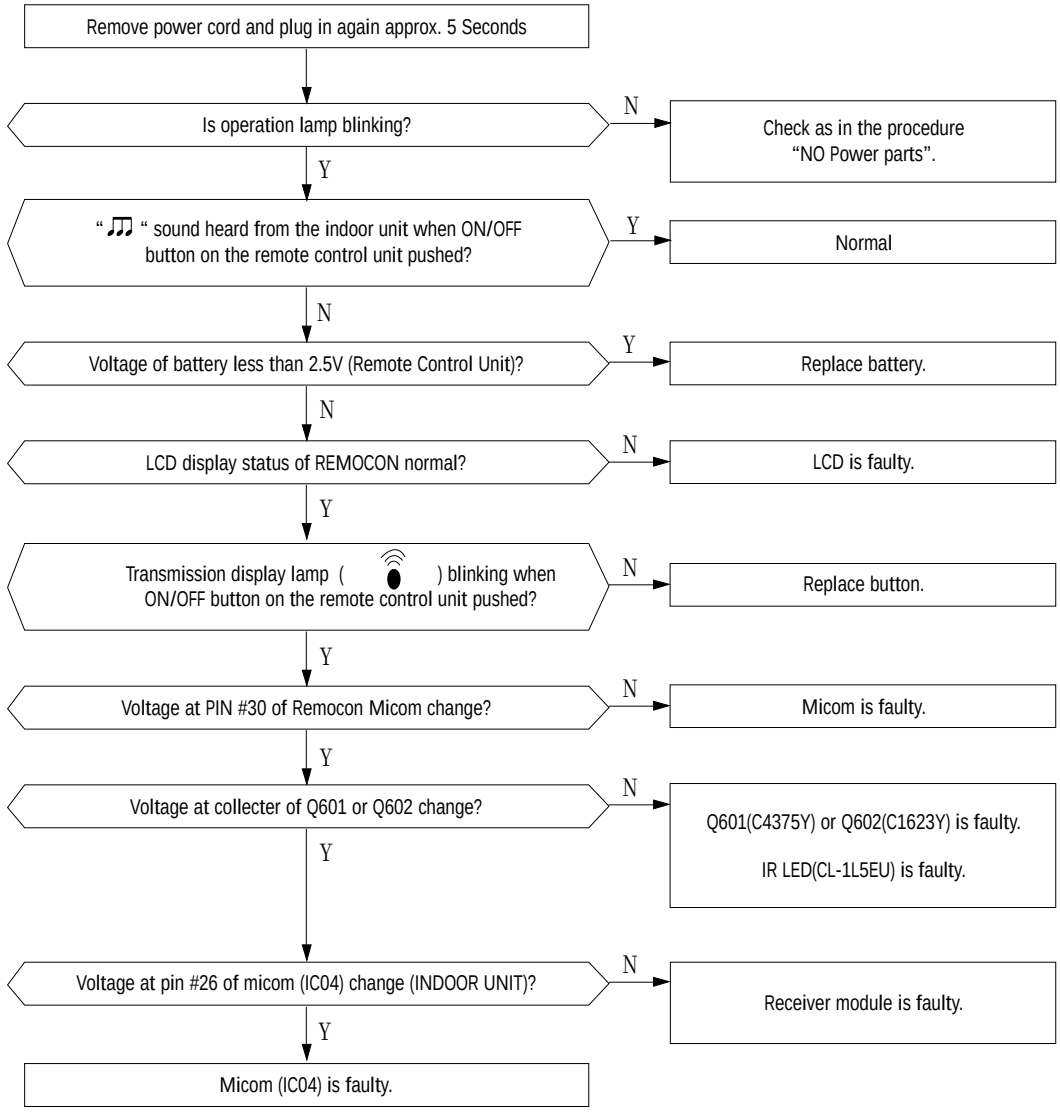
1) Checklist :
   (1) Is input voltage normal? (input voltage ±10% range)
   (2) Is the UP/DOWN louver motor properly connected with the connector (CN61)?

2) Troubleshooting procedure


Remove power cord and plug in again in approx. 5 seconds.
Is operating lamp blinking?
N
Check as in the procedure "No Power parts".
Y
Does operation start when swing button of the remote control unit pushed?
Y
Normal
N
Voltage at pin #1-#4 of micom (ICO4) change?(Squarewave)
N
Micom (IC04) is faulty.
Y
Volatge at pin #16, #15 of IC06, #10, #11 of IC05 (KID65003) change?(Squarewave)
N
Driver IC05 (KID65003) or IC06 is faulty.
Y
UP/DOWN louver motor is faulty.

◆ If Operation By Remote Control Unit Is Impossible. (Initial Diagnosis)

1) Troubleshooting procedure


Remove power cord and plug in again approx. 5 Seconds
Is operation lamp blinking?
N
Check as in the procedure "NO Power parts".
Y
" ♫ " sound heard from the indoor unit when ON/OFF button on the remote control unit pushed?
Y
Normal
N
Voltage of battery less than 2.5V (Remote Control Unit)?
Y
Replace battery.
N
LCD display status of REMOCON normal?
N
LCD is faulty.
Y
Transmission display lamp ( ) blinking when ON/OFF button on the remote control unit pushed?
N
Replace button.
Y
Voltage at PIN #30 of Remocon Micom change?
N
Micom is faulty.
Y
Voltage at collecter of Q601 or Q602 change?
N
Q601(C4375Y) or Q602(C1623Y) is faulty.
IR LED(CL-1L5EU) is faulty.
Y
Voltage at pin #26 of micom (IC04) change (INDOOR UNIT)?
N
Receiver module is faulty.
Y
Micom (IC04) is faulty.

4 Troubleshooting for Non Inverter Heat Pump (18K/ 24K)

1 Items to be checked first

1) The input voltage should be rating voltage ±10% range.
The airconditioner may not operate properly if the voltage is out of this range.

2) Is the link cable linking the indoor unit and the outdoor unit linked properly?
The indoor unit and the outdoor unit shall be linked by 6 cables.
Check the terminals if the indoor unit and outdoor unit are properly linked by the same number of cables.
Otherwise the airconditioner may not operate properly.

3) When a problem occurs due to the contents illustrated in the table below it is a symptom not related to the malfunction of the airconditioner.

NO	Operation of air conditioner	Explanation
1	The STD operation indication LED blinks when a power plug of the indoor unit is plugged in for the first time.	It indicates power is on. The LED stops blinking if the operation ON/OFF button on the remote control unit is pushed.
2	In a COOL operation mode, the compressor does not operate at a room temperature higher than the setting temperature that the IN DOOR FAN should operate. In a HEAT operation mode, the compressor does not operate at a room temperature lower than the setting temperature that indoor fan should operate.	In happens after a delay of 3 minutes when the compressor is reoperated. The same phenomenon occurs when a power is on. As a phenomenon that the compressor is reoperated after a delay of 3 minutes, the indoor fan is adjusted automatically with reference to a temperature of the air blew
3	Fan speed setting is not allowed in AUTO or DRY mode.	The speed of the indoor fan is set to LL in DRY mode. Fan speed is 5 steps is selected automatically in AUTO mode.
4	Compressor stops operation intermittently in DRY mode.	Compressor operation is controlled automatically in DRY mode depending on the room temperature and humidity.
5	Compressor of the outdoor unit is operating although it is turned off in a HEAT mode.	When the unit is turned off while de-ice is activated, the compressor continues operation for up to 9 minutes (maximum) until the deice is completed.
6	Timer LED only of the indoor unit lights up and the air conditioner does not operate.	Timer is being activated and the unit is in ready mode. The unit operates normally if the timer operation is cancelled.
7	The compressor and indoor fan stop intermittently in HEAT mode.	The compressor and indoor fan stop intermittently if room temperature exceeds a setting temperature in order to protect the compressor from overheated air in a HEAT mode.
8	Indoor fan and outdoor fan stop operation intermittently in a HEAT mode.	The compressor operates in a reverse cycle to remove exterior ice in a HEAT mode, and indoor fan and outdoor fan do not operate intermittently for within 20% of the total heater operation
9	The compressor stops intermittently in a COOL mode or DRY mode, and fan speed of the indoor unit decreases.	The compressor stops intermittently or the fan speed of the indoor unit decreases to prevent inside/outside air frozen depending on the inside/outside air temperature.

4) Indoor unit observes operation condition of the air conditioner, and displays self diagnosis details on the display panel.

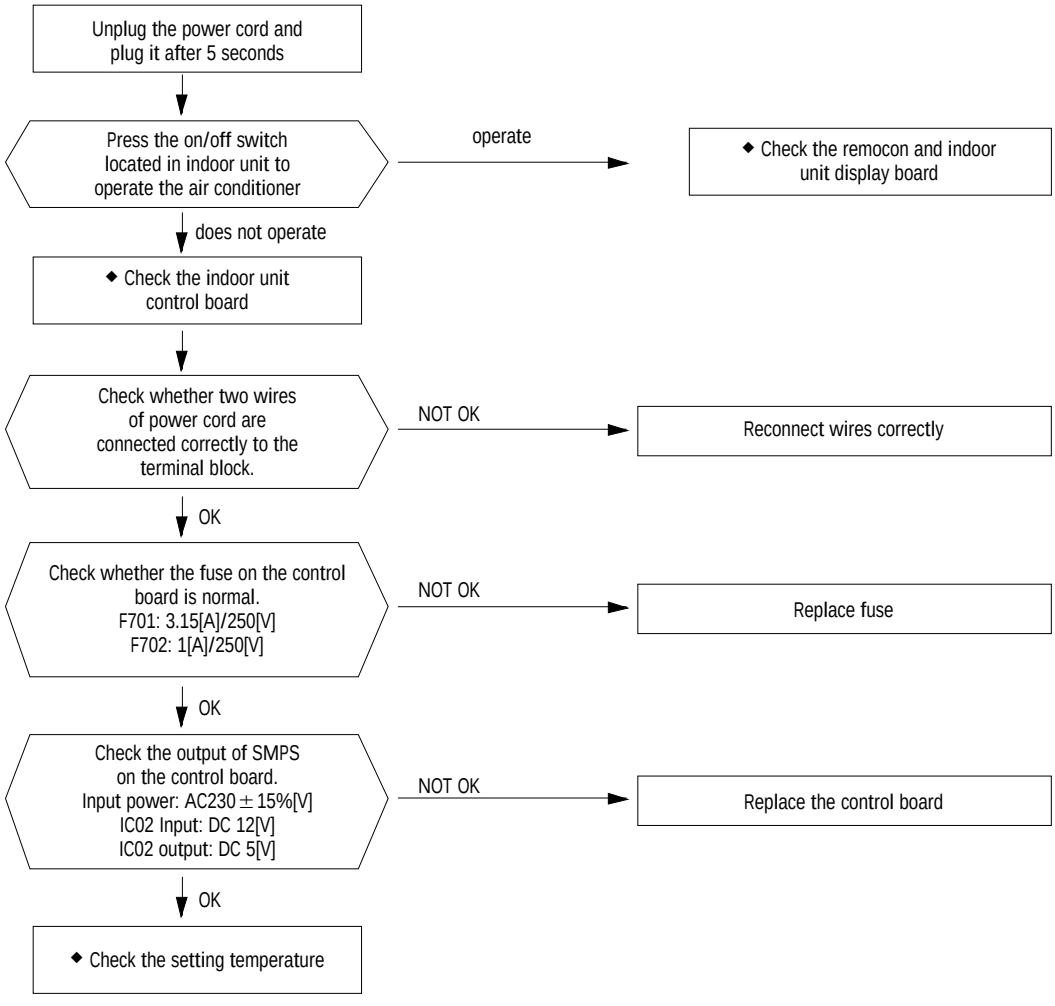
NO	Display	Self Diagnosis
1	STD LED blinking (1Hz)	Restore from power failure (input initial power)
2	TIMER LED blinking (1Hz)	Indoor unit Room sensor Error (open or short)
3	STD and TIMER LED blinking (1Hz)	Indoor unit heat exchanger temperature sensor Error (open or short)
4	BIO LED blinking (1Hz)	Indoor fan malfunctioning (for speed is below 450rpm)
5	STD, BIO and TIMER LED blinking(IUZ)	EEPROM Error
6	AII LED blinking (1Hz)	Oprion Enor (Option wasn't setup or option dala error)

2 Fault Diagnosis by Symptom

◆ No Power (completely dead)-Initial diagnosis

1) Checklist :
   (1) Is input voltage normal? (the rating voltage ±10% range)
   (2) Is AC power linked correctly?
   (3) Are connections between primary side, secondary side of the power transformer and PCB good.
   (4) Is input voltage of DC regulator IC KA7805 (IC02) normal? (11VDC-12.5VDC)
   (5) Is input voltage of DC regulator IC KA7805 (IC02) normal? (4.5VDC-5.5VDC)

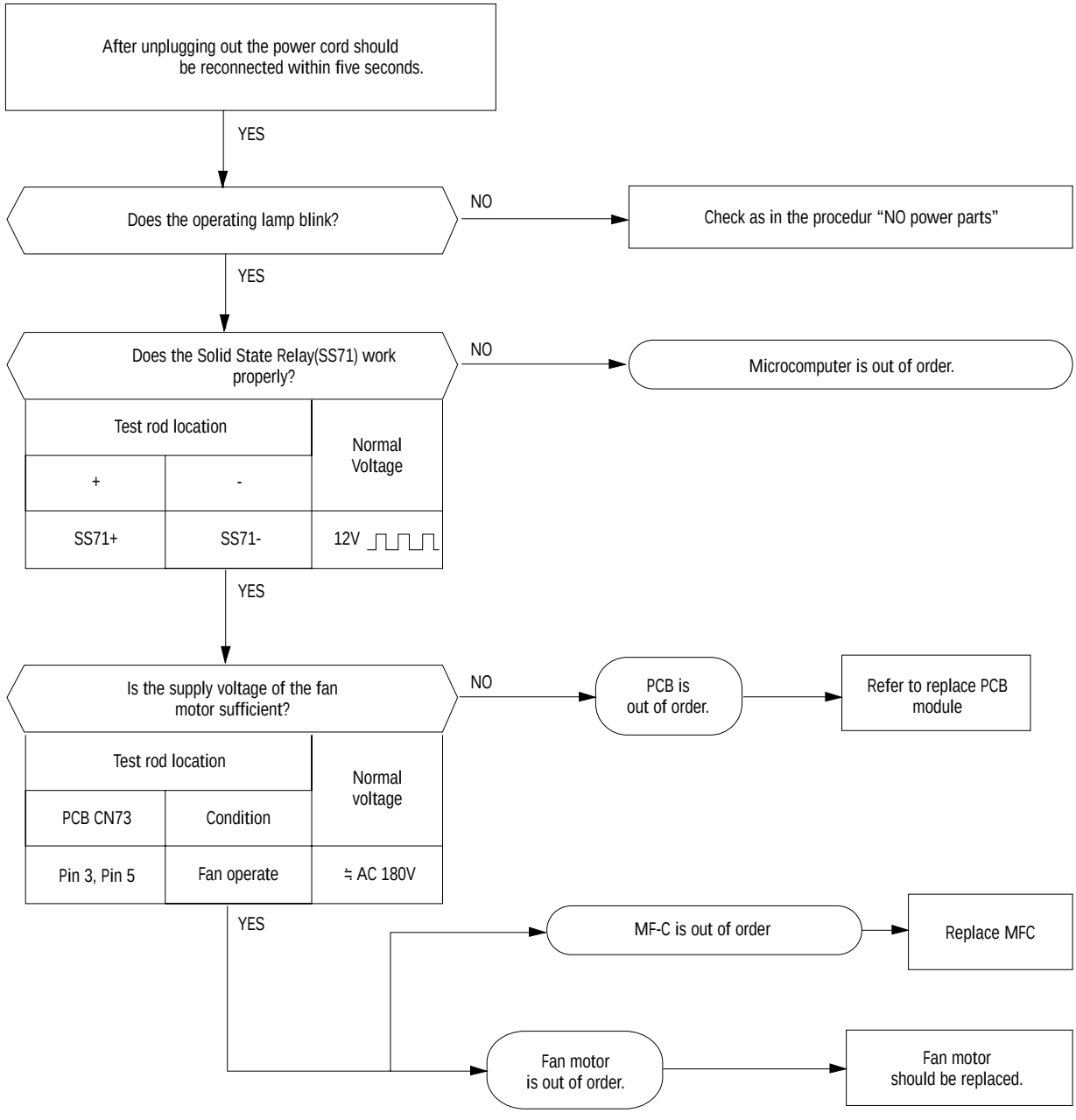
2) Troubleshooting procedure


Unplug the power cord and plug it after 5 seconds
Press the on/off switch located in indoor unit to operate the air conditioner
operate
◆ Check the remocon and indoor unit display board
does not operate
◆ Check the indoor unit control board
Check whether two wires of power cord are connected correctly to the terminal block.
NOT OK
Reconnect wires correctly
OK
Check whether the fuse on the control board is normal.
F701: 3.15[A]/250[V]
F702: 1[A]/250[V]
NOT OK
Replace fuse
OK
Check the output of SMPS on the control board.
Input power: AC230 ± 15%[V]
IC02 Input: DC 12[V]
IC02 output: DC 5[V]
NOT OK
Replace the control board
OK
◆ Check the setting temperature

◆ When the Indoor Unit Fan Does Not Operate. (Initial Diagnosis)

1) Checklist :
   (1) Is the indoor unit fan motor properly connected with the connector (CN73)?
   (2) Is the AC voltage correct?
   (3) Is HALL IC in indoor fan motor properly connected with the connector (CN43)?
   (4) Is the running capacitor properly connected with the solder part of the PCB?

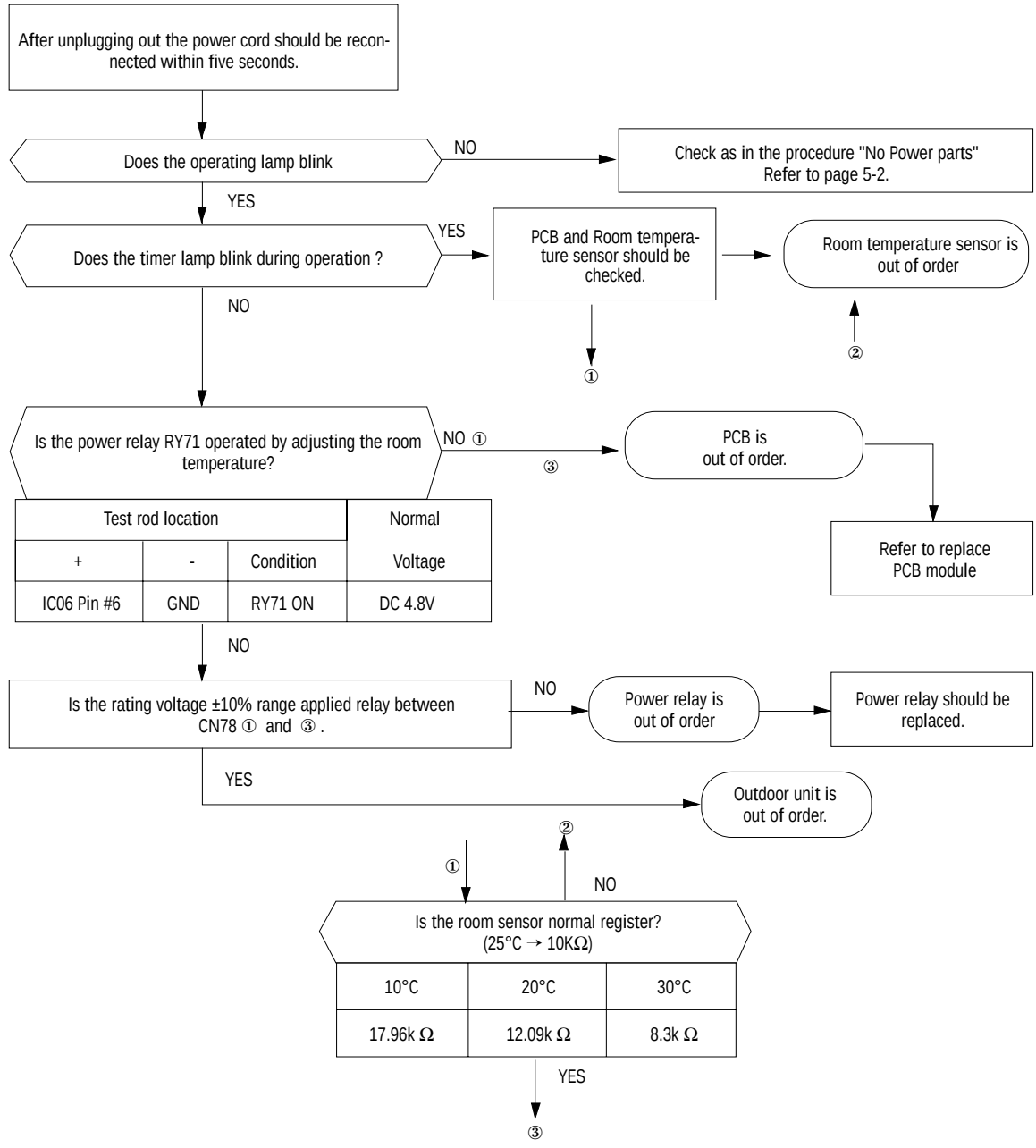
2) Troubleshooting procedure



◆ When the Outdoor Unit Does Not Operate. (Initial Diagnosis)

1) Checklist :
   (1) Is input voltage normal? (the rating voltage ±10% range)
   (2) Is the set temperature of the remote control higher than room temperature in COOL mode?
   (3) Is the set temperature of the remote control lower than room temperature in HEAT mode?
   (4) Is the POWER IN connector (CN78) linked correctly?
   (5) Is the outdoor unit properly connected with the TERMINAL BLOCK connector(7P)?

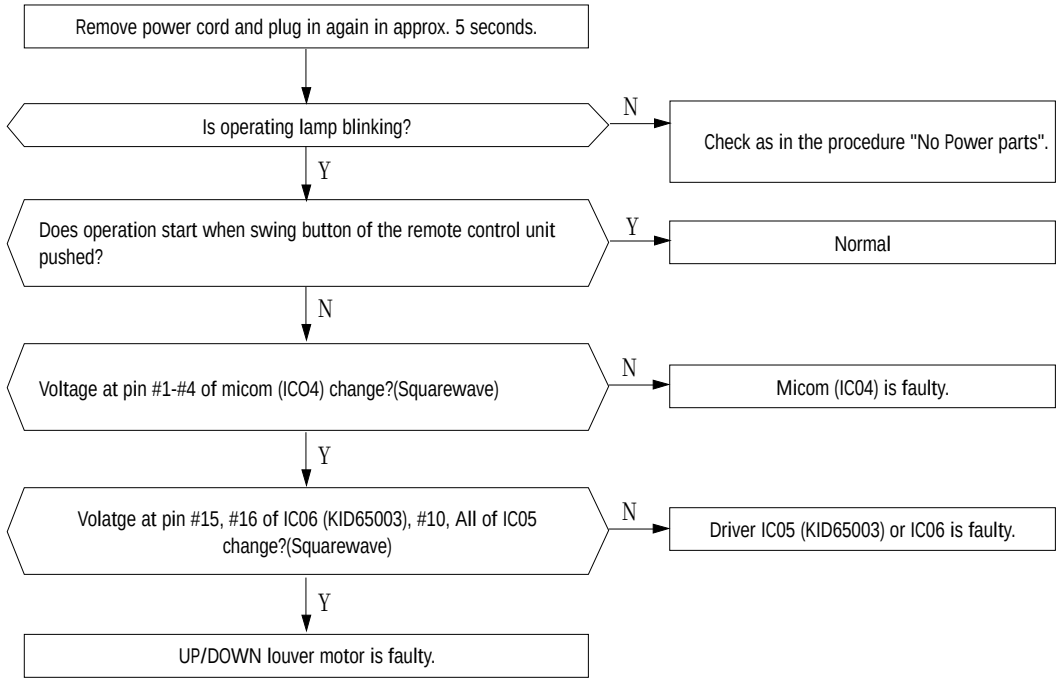
2) Troubleshooting procedure



◆ When the UP/DOWN Louver Moter Does Not Operate. (Initial Diagnosis)

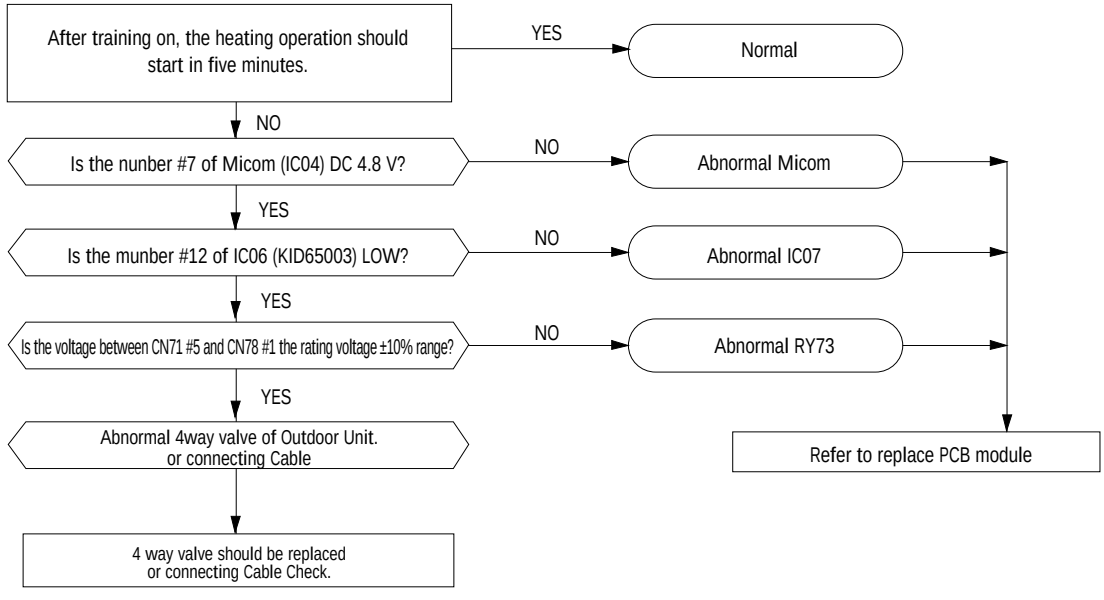
1) Checklist :
(1) Is input voltage normal? (the rating voltage ±10% range)
(2) Is the UP/DOWN louver motor properly connected with the connector (CN61)?

2) Troubleshooting procedure


Remove power cord and plug in again in approx. 5 seconds.
Is operating lamp blinking?
N
Check as in the procedure "No Power parts".
Y
Does operation start when swing button of the remote control unit pushed?
Y
Normal
N
Voltage at pin #1-#4 of micom (ICO4) change?(Squarewave)
N
Micom (IC04) is faulty.
Y
Volatge at pin #15, #16 of IC06 (KID65003), #10, All of IC05 change?(Squarewave)
N
Driver IC05 (KID65003) or IC06 is faulty.
Y
UP/DOWN louver motor is faulty.

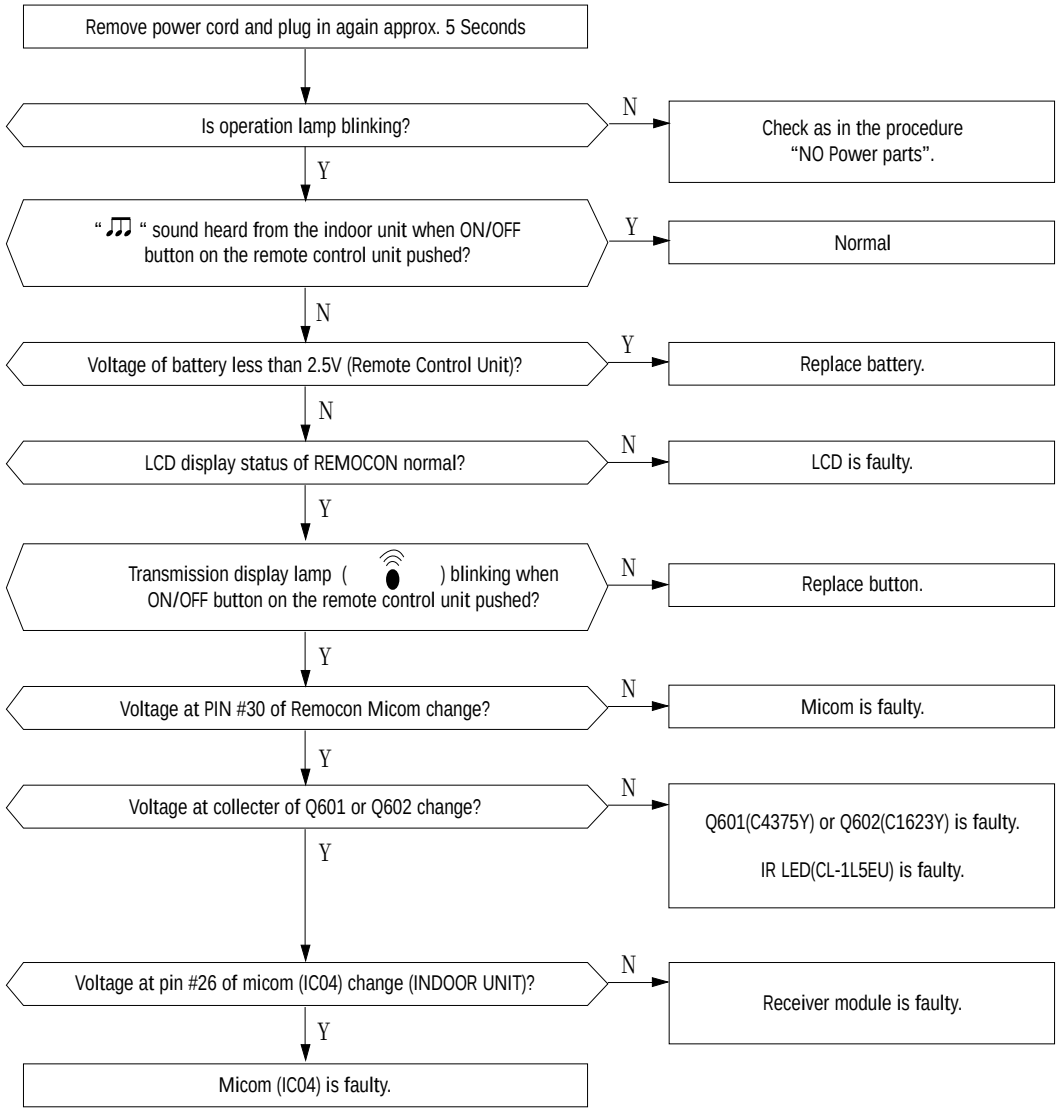
◆ In the Heat mode, When there is no warm air current. Check this first;

(1) Is the set temperature of Remote Control lower than room temperature in Heat mode?
(2) Is the Indoor PCB properly connected with the CN71 and CN78 connector?


After training on, the heating operation should start in five minutes.
YES
Normal
NO
Is the nunber #7 of Micom (IC04) DC 4.8 V?
NO
Abnormal Micom
YES
Is the munber #12 of IC06 (KID65003) LOW?
NO
Abnormal IC07
YES
Is the voltage between CN71 #5 and CN78 #1 the rating voltage ±10% range?
NO
Abnormal RY73
YES
Abnormal 4way valve of Outdoor Unit. or connecting Cable
Refer to replace PCB module
4 way valve should be replaced or connecting Cable Check.

◆ If Operation By Remote Control Unit Is Impossible. (Initial Diagnosis)

1) Troubleshooting procedure


Remove power cord and plug in again approx. 5 Seconds
Is operation lamp blinking?
N
Check as in the procedure "NO Power parts".
Y
" ♫ " sound heard from the indoor unit when ON/OFF button on the remote control unit pushed?
Y
Normal
N
Voltage of battery less than 2.5V (Remote Control Unit)?
Y
Replace battery.
N
LCD display status of REMOCON normal?
N
LCD is faulty.
Y
Transmission display lamp ( ) blinking when ON/OFF button on the remote control unit pushed?
N
Replace button.
Y
Voltage at PIN #30 of Remocon Micom change?
N
Micom is faulty.
Y
Voltage at collecter of Q601 or Q602 change?
N
Q601(C4375Y) or Q602(C1623Y) is faulty.
IR LED(CL-1L5EU) is faulty.
Y
Voltage at pin #26 of micom (IC04) change (INDOOR UNIT)?
N
Receiver module is faulty.
Y
Micom (IC04) is faulty.

5 Troubleshooting for Inverter

Since the inverter air conditioner is equipped with Electrical control circuits at both Indoor & outdoor unit, the trouble shooting shall be performed according to the error mode.
Inside the controller of the outdoor unit (inverter), the large capacity of electrolytic condenser so that it takes the time to discharge after the power off since the electrical charge remains (the charging voltage DC 340V).
Take care of the electrical shock by contact on the charging part before the discharge after the power off. (It takes approximately 2 minutes to discharge).

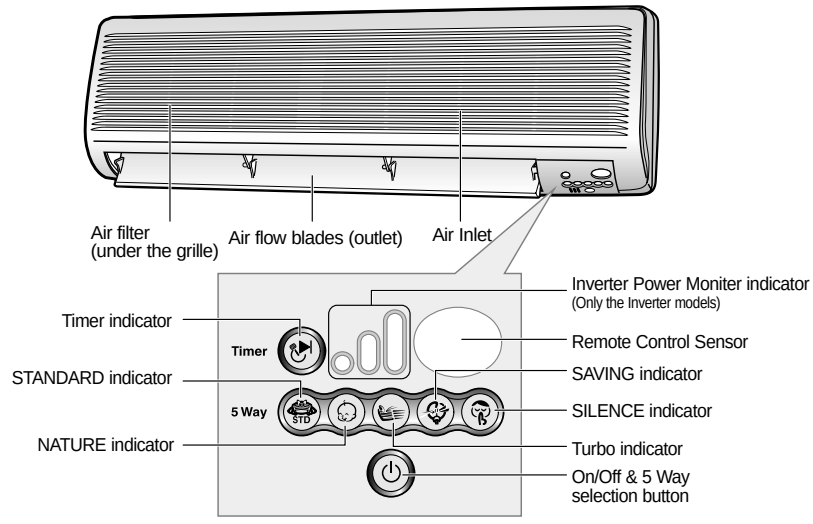
1 Basic items for trouble shooting

1) Is the power source proper?
   The power source shall be in the range of the rated voltage ±10%. If it is out of this range, it may cause the abnormal operation.
2) Is the connection made between the indoor and outdoor unit?
   The connection between indoor and outdoor unit shall be performed with 4 wire. (connection cable of indoor and outdoor unit + ground wire).
3) The phenomena as follows are not out of order.

NO	Phenomena	Cause and reason
1	The operation is not done.	• Is the power off or the power unplugged? • Does it stop because it is the completion time? • Unplug and plug again the power source for 2 minutes.
2	The wind comes out but the heating/cooling is not performed.	• Is the filter clogged with dust or dirty? • Is there any direct light on the outdoor unit or any obstacle against it? • Is the selected temperature too high? Lower the selected temperature lower than the current one (during cooling). • Is the selected temperature too low? Raise the desired temperature than the current one? • Is the “Fan only Mode” operation?
3	The remote controller does not operate.	• Is the battery run out? • Is the battery inserted in the wrong way(+, -)? • Is the detection part of the indoor unit blocked? • Does it interfered with the radio of neon sign?
4	The wind volume is not adjusted.	• Is the operation selected among one of Auto / Dry / Turbo / Sleeping? • The temperature setting is not required since the wind volume set automatically. • Check again at the state of Cooling / Fan only / Heating.
5	The temperature is not set.	• Is the operation selected among the Dry / Turbo / Sleeping / Fan only Mode. Since the temperature is automatically set, the temperature setting is not required. • Check again at the cooling/heating state. • The standard temperature ±2˚C during the automatic operation.
6	The operation lamp continues to be flickering.	• Push the Operation / Stop button. • Unplug and plug the power source.
7	The immediate operation starts without control of remote controller when plugged	• It is the case that the auto restart function works. # Auto restart function is the convenient function where the operation state is memorized in the Memory IC during the blackout and the operation restarts when the power comes back.

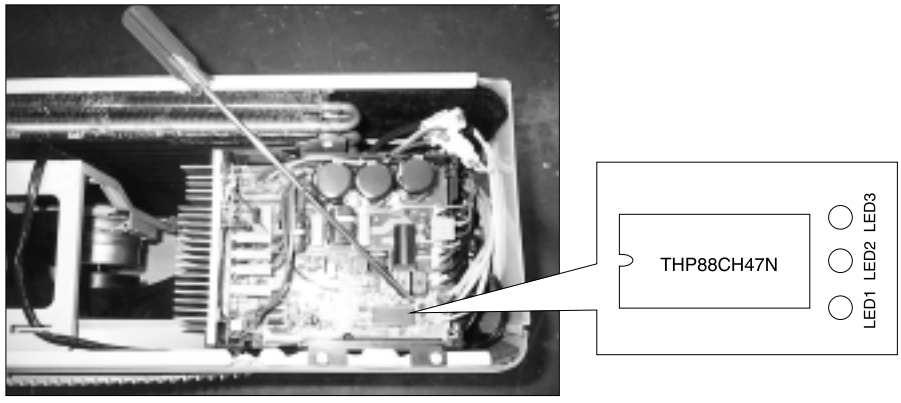
2 The first determination method of troubled part

◆ Error mode display of indoor unit



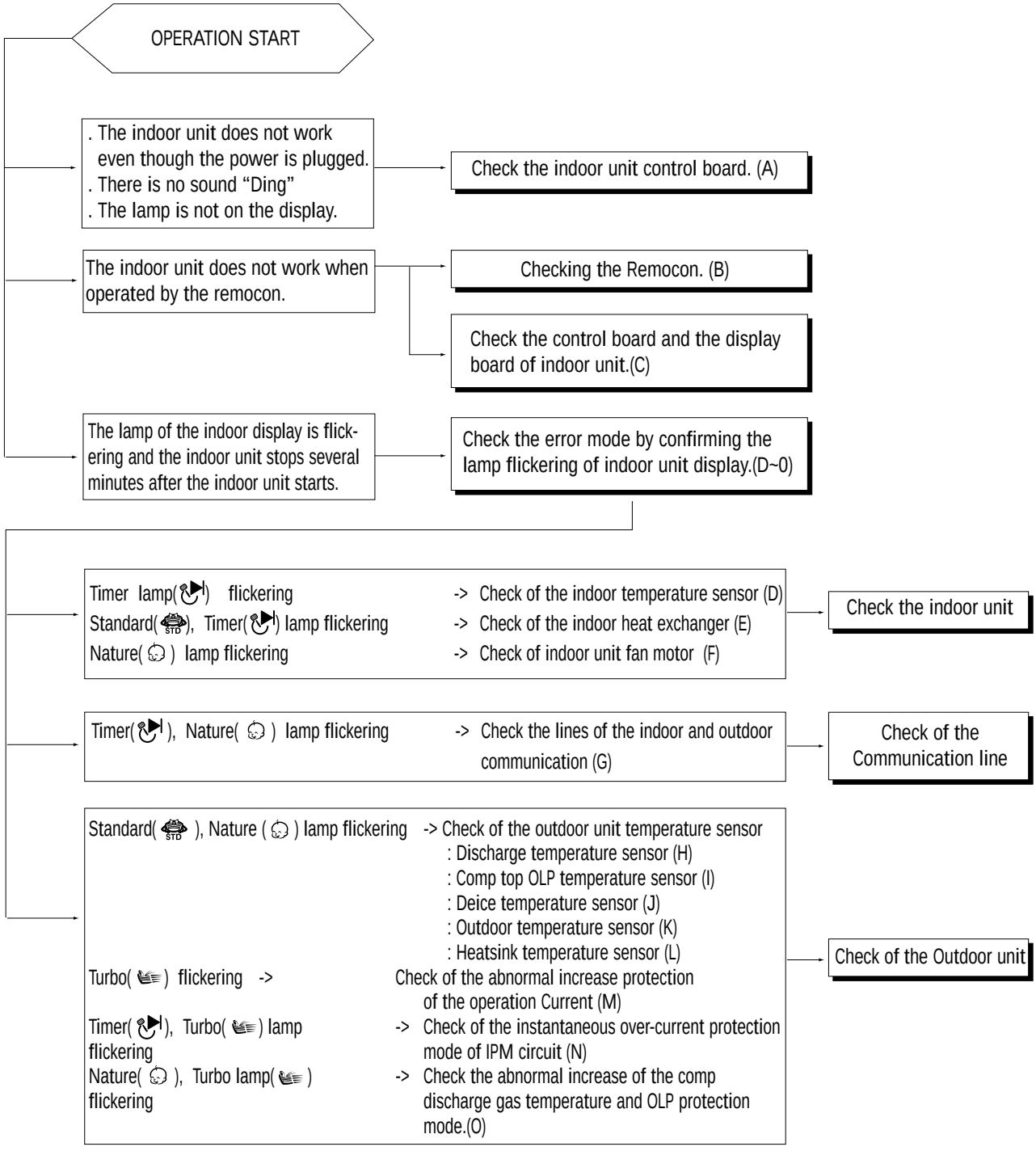
LAMP of Display Monitor						Description
Timer	STD	NATURE	Turbo	SAVING	SILENCE	● : Lamp on ◎ : Lamp flickering X : Lamp off
◎	X	X	X	X	X	Indoor unit room temperature sensor error(open or short)
◎	◎	X	X	X	X	Indoor unit heat exchanger temperature sensor error (open or short)
X	X	◎	X	X	X	Indoor fan motor mal function
◎	◎	◎	X	X	X	EEPROM error
◎	◎	◎	◎	◎	◎	Option error
X	◎	◎	X	X	X	Outdoor unit temperature sensor error(open or short) - outdoor temp-sensor - deice temp-sensor - OLP temp- sensor - discharge temp-sensor - heatsink temp-sensor
◎	X	◎	X	X	X	Abnormal communication (Indoor - Outdoor unit)
X	X	X	◎	X	X	Abnormal increase of operation current
X	X	◎	◎	X	X	Abnormal increase of discharge and OLP temperature
◎	X	X	◎	X	X	Over current of IPM circuit
X	◎	◎	◎	X	X	Trouble of the PTC circuit of the outdoor
◎	X	◎	◎	X	X	Trouble of AC current sensor (open/short) and Leakage of refrigerant(R-22)

◆ Error mode display of outdoor unit board



LAMP of inverter PBA			Description ● : LAMP ON ◎ : LAMP FLICKERING X : LAMP OFF
YELLOW	BLUE	RED	
X	◎	●	Normal operation and communication(Indoor - Outdoor unit)
X	X	●	Abnormal communication(Indoor - Outdoor unit)
X	X	X	Trouble of the control power of the outdoor
◎	X	X	Abnormal increase of heatsink temperature
◎	X	●	Abnormal increase of discharge temperature
◎	●	X	Abnormal increase of operation current
◎	●	●	Abnormal increase of OLP temperature
X	X	◎	Over current of IPM circuit
X	●	◎	Over voltage of IPM circuit
●	◎	●	Over voltage and current of PFC circuit
●	X	◎	Trouble of option setting
◎	◎	X	Trouble of discharge temp-sensor (open/short)
◎	◎	●	Trouble of AC current sensor (open/short)and Leakage of refrigerant(R-22)
◎	X	◎	Trouble of outdoor temp-sensor (open/short)
◎	●	◎	Trouble of deice temp-sensor (open/short)
X	◎	◎	Trouble of heatsink temp-sensor (open/short)
●	◎	◎	Trouble of DC link voltage circuit
◎	◎	◎	Trouble of OLP temp-sensor (open/short)

3 Sequence of trouble shooting for inverter aircon


OPERATION START
. The indoor unit does not work even though the power is plugged.
. There is no sound “Ding”
. The lamp is not on the display.
Check the indoor unit control board. (A)
The indoor unit does not work when operated by the remocon.
Checking the Remocon. (B)
Check the control board and the display board of indoor unit.(C)
The lamp of the indoor display is flickering and the indoor unit stops several minutes after the indoor unit starts.
Check the error mode by confirming the lamp flickering of indoor unit display.(D~0)
Timer lamp( ) flickering -> Check of the indoor temperature sensor (D)
Standard( ), Timer( ) lamp flickering -> Check of the indoor heat exchanger (E)
Nature( ) lamp flickering -> Check of indoor unit fan motor (F)
Check the indoor unit
Timer( ), Nature( ) lamp flickering -> Check the lines of the indoor and outdoor communication (G)
Check of the Communication line
Standard( ), Nature ( ) lamp flickering -> Check of the outdoor unit temperature sensor
: Discharge temperature sensor (H)
: Comp top OLP temperature sensor (I)
: Deice temperature sensor (J)
: Outdoor temperature sensor (K)
: Heatsink temperature sensor (L)
Turbo( ) flickering -> Check of the abnormal increase protection of the operation Current (M)
Timer( ), Turbo( ) lamp flickering -> Check of the instantaneous over-current protection mode of IPM circuit (N)
Nature( ), Turbo lamp( ) flickering -> Check the abnormal increase of the comp discharge gas temperature and OLP protection mode.(O)
Check of the Outdoor unit

◆ Check of indoor unit control board

▷ Unplug the power cord and plug it after 5 seconds.
▷ press the on/off switch located in indoor unit inside to operate the air conditioner.
• If the air conditioner operates, check the remocon and indoor unit display board.
• If the air conditioner does not operate, check according to the sequence of the followings:

▷ Check sequence of indoor unit control board

Step 1 : Check whether two wires of power cord (Sky-blue, brown) are connected correctly to the terminal block.
- Sky -blue : connected to "N"
- Brown : connected to "L"

Step 2: Check whether the wire connected to the terminal block is connected correctly to the control board.

(Control board)		(Terminal block)
TB73	WHT	(N1)
TB72	SKY-BLU	N
TB71	ORG	L
RY71	BRN	1
CN73	BLK	2

Step 3 : Check whether the fuse (F701)(F702) on the control board is normal. (3.15 [A]/250[V]:F701) (1[A]/250[V] : F702)
- If the fuse is broken, replace it with the new one.

Step 4 : check the output of SMPS on the control board.
- Input power AC187~AC264V—-IC 02 Input: DC 12V
  IC 02 output : DC 5V

◆ Display board and remocon check of indoor unit

▷ Check whether the connection wire of Display board is correctly connected to CN91 connector.
▷ Check the voltage of remocon battery. - the voltage of one battery shall be higher than about 1.4 V, and then the remocon operates normally.
▷ Check whether the neon sign is on and the 3 wave long fluorescent lamp is on around the indoor unit. - After putting all lamps of the indoor out and then operate it by remocon. If it operates with the remocon, it is the abnormality due to the interference from the light of lamps. (Aircon unit is normal).

◆ Check the indoor temperature sensor and indoor heat exchanger temperature sensor.

Take out the thermistor connected to the connector (CN41) of control board of indoor unit and measure the resistance between two wires and if it is same as follows: it is normal but if not, replace it.

Ambient temperature (°C)	15°C	20°C	25°C	30°C	35°C	40°C	
Resistance of thermistor [KΩ]	14.68	12.09	10	8.31	6.94	5.83	

◆ Check of indoor unit fan motor

▷ Check whether the wire of fan motor is connected to the connector of control board (CN42, CN71) of indoor unit.

▷ Check whether the error mode displays after the strong revolution for approximately 15 seconds since aircon is on.

-> In case the error mode displays after the fan motor is rotating for 15 seconds → Defect of HALL IC of fan motor and Control board

-> In case that the error mode displays without running of fan motor after 15 seconds. → Operate with the pin of SSR(SS71) short of indoor unit control board and then if the fan motor does not run, it is the fan motor defect.
If it rotates, it is the defect of control board (SS71, IC05, IC04).

◆ Check of communication line between the indoor unit and outdoor unit

(Communication error mode)

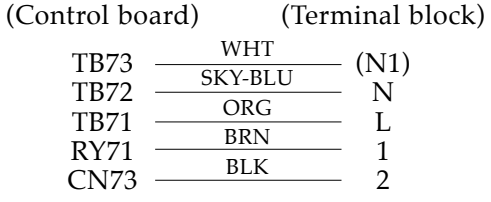
1) Check of connection

▷ Check whether the cable wire connecting the indoor unit with outdoor unit is correctly connected to the (N1), 1, 2 terminal. (If the wire is connected reversely, the communication error occurs)

▷ If the cable connecting the indoor unit and outdoor unit is longer than 20m, error mode occurs (shorten the cable length).

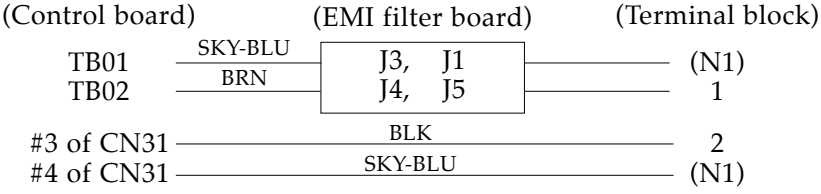
(Check of indoor unit)

▷ Check whether the connection wire of the terminal block and control board of indoor unit is correct.



(Check of outdoor unit)

▷ Check whether the connection wire of the terminal block and control board of outdoor unit is correct.



2) Check of power supply to the outdoor unit

After operation of aircon, select the turbo mode and approximately 3minutes later, check whether the red color lamp of control board (to be seen if the top cover of outdoor unit) is on.

-> If the red lamp (LED 3) is not on, check the power part of control board of outdoor unit.

◆Check the connection of reactor.

-> If the red lamp (LED3) is on and green lamp is flickering, it is normal.

◆ Check of discharge temperature sensor and comp top OLP temperature sensor.

▷ Connector of outdoor unit control board
(PIN#3,4 of CN51 - discharge temperature sensor), (PIN#1,2 of CN52-OLP Temperature sensor)
Measure the resistance between two wires and if it is same as follows, it is normal but if not, replace.

Ambient temperature (°C)	0°C	10°C	20°C	30°C	40°C	50°C	
Resistance of thermistor [KΩ]	553	362	242	166	165	82	

◆ Check the defrost temperature sensor and outdoor temperature sensor

▷ Connector of outdoor unit control board
(PIN#1,2 of CN51 - outdoor temperature sensor),(PIN#3,4 of CN52-deice Temperature sensor)
Measure the resistance between two wires and if it is same as follows, it is normal but if not, replace it.

Ambient temperature (°C)	15°C	20°C	25°C	30°C	35°C	40°C	
Resistance of thermistor [KΩ]	14.68	12.09	10	8.31	6.94	5.83	

◆ Check the heatsink temperature sensor of IPM

▷ Connector of outdoor unit IPM board(CN02)
Measure the resistance between two wires and if it is same as follows, it is normal but if not, replace it.

Ambient temperature (°C)	15°C	20°C	25°C	30°C	35°C	40°C	
Resistance of thermistor [KΩ]	77.4	61.4	49.1	39.5	31.9	26	

◆ Check of operation current abnormal increase mode

▷ The operation abnormal current mode is the protection control for the safe operation by detecting the operation current of inverter aircon by the current sensor on the control board.
▷ If the operation current abnormal increase occurs,
♦The ventilation is not good because the outdoor unit is installed wrong (the ambient temperature is higher than 50 °C)
-> Reinstall the outdoor unit so that the good ventilation can be made.
♦If the Refrigerant is overcharged.
-> Check the amount of Refrigerant.
♦If the comp is locked.
-> Replace the comp.
♦If the comp is operating without the revolution of fan motor.
-> Check the fan motor connector, replace the fan motor.
♦If the protection cover is operating with bending to the outdoor.
-> Take out the protection cover.
♦If two outdoor units are operating face to face. (the bad ventilation is made)
-> Reinstall the outdoor unit for the good ventilation.
♦The air circulation is bad due to the attachment of falling leaves
-> Take away the leaves for the good ventilation.

Check the elements of current sensor block of the outdoor control board.
♦R506 — 680Ω ♦R507 — 1.8 KΩ ♦R508 — 10 KΩ

◆ Check of instantaneous over-current protection of IPM circuit.

▷ Inverter instantaneous over-current protection mode is the mode to be actuated in order to prevent the damage of elements from the peak current of IPM circuit elements.
▷ In case that the inverter circuit instantaneous over-current protection mode actuates.

(condition of installation)

- ♦The ventilation is not good because the outdoor unit is installed wrong (the ambient temperature is higher than 50 (°C))
  -> Reinstall the outdoor unit so that the good ventilation can be made.
- ♦In case that the operation is made with the cover bent of the outdoor unit.
  -> Take out the cover.
- ♦If two outdoor units are operating face to face, (the bad ventilation is made)
  -> Reinstall the outdoor unit for the good ventilation.
- ♦The air circulation is bad due to the attachment of falling leaves.
  -> Take away the leaves for the good ventilation.
- ♦If the Refrigerant is overcharged.
  -> Check the amount of Refrigerant.

(Unit defect)

- ♦If the comp is locked.
  -> Replace the comp.
- ♦If the comp is operating without the revolution of fan motor.
  -> Check the fan motor connector and replace the fan motor.
- ♦In case the parts of the control board is damaged.
  -> Replace simultaneously the inverter control board and the IPM board.

◆ Check of the comp discharge gas temperature and OLP temperature abnormal rise.

▷ If the comp discharge gas temperature and OLP temperature rises higher than a certain level, it protects the circuit.
▷ If the comp discharge gas temperature and OLP temperature rises abnormally,

(Condition of installation)

- ♦The ventilation is not good because the outdoor unit is installed wrong (the ambient temperature is higher than 50 (°C))
  -> Reinstall the outdoor unit so that the good ventilation can be made.
- ♦In case that the operation is made with the cover bent of the outdoor unit.
  -> Take out the cover.
- ♦If two outdoor units are operating face to face, (the bad ventilation is made)
  -> Reinstall the outdoor unit for the good ventilation.
- ♦The air circulation is bad due to the attachment of falling leaves
  -> Take away the leaves for the good ventilation.
- ♦If the refrigerant is insufficient.
  -> Fill up the amount of refrigerant.

(Unit defect)

♦If the comp is locked.

-> Replace the comp.

♦If the comp is operating without the revolution of fan motor

-> Take out the protection cover.

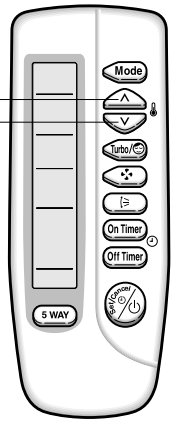
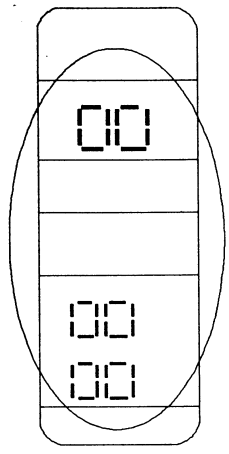
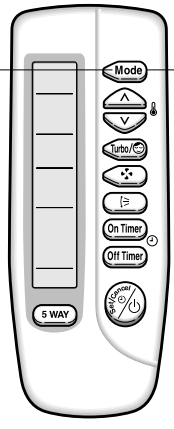
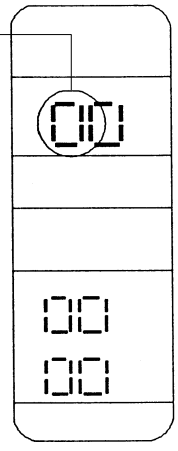
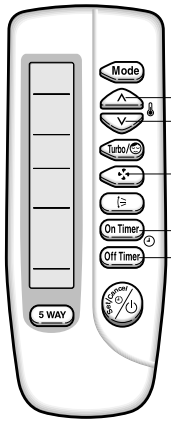
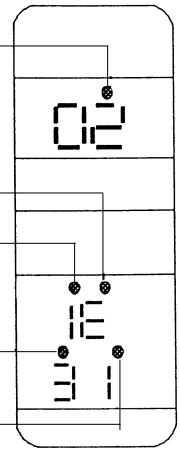
-> Check the fan motor connector and replace the fan motor.

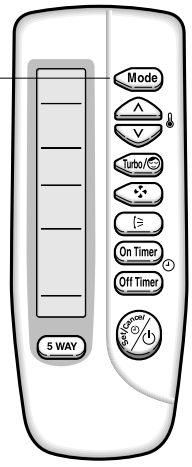
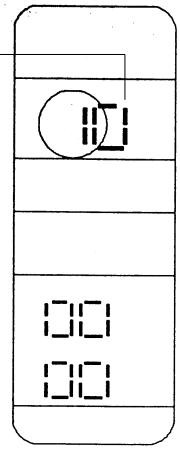
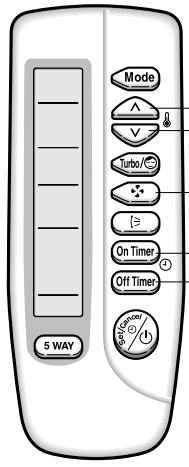
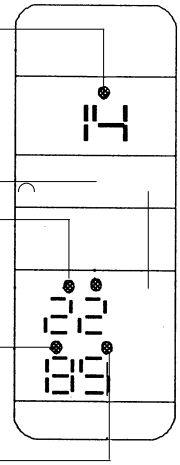
4 Fault Diagnosis of Major Parts

<table>
<tr><th>Parts</th><th colspan="8">Diagnosis</th></tr>
<tr><td rowspan="3">♦ Indoor "Temp.Sensor"
♦ Indoor "Heat ex. Sensor"
♦ Outdoor "Temp.Sensor"
♦ Outdoor "Deice Temp. Sensor"</td><td colspan="8">Measure resistance with a tester.</td></tr>
<tr><td>Normal</td><td colspan="7"><table><tr><td>Ambient temperature</td><td>15°C</td><td>20°C</td><td>25°C</td><td>30°C</td><td>35°C</td><td>40°C</td></tr><tr><td>Resistance of thermistor[KΩ]</td><td>14.68</td><td>12.09</td><td>10</td><td>8.31</td><td>6.94</td><td>5.83</td></tr></table></td></tr>
<tr><td>Abnormal</td><td colspan="7">∞, 0 Ω … open or short</td></tr>
<tr><td rowspan="3">♦ Outdoor "Discharge Temp.Sensor"
♦ Outdoor "OLP Temp.Sensor"</td><td>Normal</td><td colspan="7"><table><tr><td>Ambient temperature</td><td>0°C</td><td>10°C</td><td>20°C</td><td>30°C</td><td>40°C</td><td>50°C</td></tr><tr><td>Resistance of thermistor[KΩ]</td><td>553</td><td>362</td><td>242</td><td>166</td><td>165</td><td>82</td></tr></table></td></tr>
<tr><td>Abnormal</td><td colspan="7">∞, 0 Ω … open or short</td></tr>
<tr><td rowspan="5">Indoor Fan Motor</td><td colspan="8">Measure resistance between terminals (CN72) with a tester</td></tr>
<tr><td>Normal</td><td colspan="7">At ambient temperature (10°C ~ 30°C)<table><tr><td>between</td><td>Voltage</td><td></td></tr><tr><td>Red, Blue</td><td>410±10%</td><td>Main</td></tr><tr><td>Red, Yellow</td><td>325±10%</td><td>Sub</td></tr></table></td></tr>
<tr><td>Abnormal</td><td colspan="7"></td></tr>
<tr><td colspan="8">Measure the voltage between ground and signal wire of the fan motor</td></tr>
<tr><td>Normal</td><td colspan="7"><table><tr><td>between</td><td>Voltage</td></tr><tr><td>Gray, Orange</td><td>05V~4.5V</td></tr><tr><td>Yellow, Orange</td><td>5V</td></tr></table></td></tr>
<tr><td>Abnormal</td><td colspan="7">Abnormal if voltage does not change from 0V to 5V.</td></tr>
<tr><td rowspan="2">Outdoor Fan Motor</td><td>Normal</td><td colspan="7">At ambient temperature (10°C ~ 30°C)<table><tr><td>between</td><td>Resistance</td><td></td></tr><tr><td>Black, Red</td><td>275±10%</td><td>Main</td></tr><tr><td>Black, White</td><td>350±10%</td><td>Sub</td></tr></table></td></tr>
<tr><td>Abnormal</td><td colspan="7">∞, 0 Ω … open or short</td></tr>
<tr><td rowspan="3">Stepping Motor
(UP/DOWN swing motor)</td><td colspan="8">Measure resistance between red wire and each terminal.</td></tr>
<tr><td>Normal</td><td colspan="7">Approx. 380Ω at ambient temperature (20°C ~30°C)</td></tr>
<tr><td>Abnormal</td><td colspan="7">∞, 0 Ω … open or short</td></tr>
</table>

6 Set up the Model Option

❋ If you make the replacement of the ASS'Y CONTROL-IN or MAIN PCB , Be sure to be set up the model option as follow the steps

Remote controller operation method as per the step	Applicable key	Display status
1st step Method) ① Remove the battery of remote controller ② Press the temperature raise/down key simultaneously ③ Insert the battery again (Result) If the screen of remocn displays as shown in the right, go to the second step		
2nd step Method) If the first digit of LCD is 0 on the remocon screen, go to the 3rd step. ❋ If it is 1, press the mode key once to change to 0 and go to the 3rd step.		
3rd step Method) Press the marked key to input the option number. example) 021E31 Result) Go to 4th step if it displays as shown in the right (The number increases from 1~9, and A, b, C, d, E, F whenever pressing the key.)		

Remote controller operation method as per the step	Applicable key	Display status
4th step Method) After completion of 3rd step, and if the MODE KEY is pressed once, 1. 1~3 steps are saved internally 2. If the first number at the time is “1”, it is correct and so go to 5th step ❊ If pressing mode key and the first digit becomes 0, the screen of 1~3 steps can be seen.		
5th step Method) Pressing the marked key to input the option number. example) 142285 Result) If it displays as shown in the right go to the 6th step		
6th step Method) When pressing the operation ON/OFF key with the direction of remote controller for set, the sound “Ding, or Diriring is heard and then the input of option is completed. ❊ Refer to the right side if the error appears.	ERROR MODE 1. When the lamps of (STANDARD(STD), NATURE( ), TIMER( )) is flickering → failute of option input After removing the set power cord and insert it again, pressing the operation on/off key to retry and if the condition is same, EPROM is deffcective or misinsertted. So replace the PCB.	2. When all lamps of indoor unit( ) are flickering with the sound of Dididiring, → The current option input is different from that of already input one: Check the option number correctly and if it is correct, press the key once more to input the option. (check correctly) → If the option is not input at the time and all lamps are continuously flickering ; since it is the case that the option number is out of the input range, check the option number again and do again the steps from 1 - 6steps

<Table of the option code>

◆ **Non Inverter Cooling Only (7K/ 9K/ 12K)**

MODEL	OPTION CODE
AS09A3ME SC09ZA3/A	010000-1700d9
AS07A3ME SC07ZA3/A	010000-1700b7
AS09A4ME SCO9ZA4/A	000000-1700d9
AS07A4ME SCO7ZA4/A	000000-1700b7
AS12A1ME SC12ZA1/A	010000-17021d
AS09A1ME SC09ZA1/A	010000-1700d9
AS07A1ME SC07ZA1/A	010000-1700b7
AS12A2ME SC12ZA2/A	000000-17021d
AS09A2ME SCO9ZA2/A	000000-1700d9
AS07A2ME SCO7ZA2/A	000000-1700b7

<Table of the option code>

◆ Non Inverter Heat pump (7K/ 9K/ 12K)

MODEL	OPTION CODE
AQ09A3ME SH09ZA3/A	016825-1700d9
AQ07A3ME SH07ZA3/A	014825-1700b7
AQ09A4ME SHO9ZA4/A	006825-1700d9
AQ07A4ME SHO7ZA4/A	004825-1700b7
AQ12A1ME SH12ZA1/A	017d25-17021d
AQ09A1ME SH09ZA1/A	016A25-1700d9
AQ07A1ME SH07ZA1/A	014825-1700b7
AQ12A2ME SH12ZA2/A	007d25-17021d
AQ09A2ME SHO9ZA2/A	006A25-1700d9
AQ07A2ME SHO7ZA2/A	004825-1700b7

<Table of the option code>

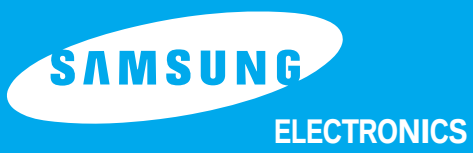
◆ **Inverter (9K/ 12K)**

MODEL	OPTION CODE
AQV12A2ME SH12VA2	005212-10123F
AQV09A2ME SH09VA2	006500-1010FB
AQV12A1ME SH12VA1	015212-10123F
AQV09A1ME SHO9VA1	016500-1010FB

<Table of the option code>

◆ Non Inverter Cooling Only & Heat pump (18K/ 24K)

REMOCON / MODEL	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6	SEG7	SEG8	SEG9	SEG10	SEG11	SEG12
AQT24A1(2)RE	0	9	4	6	1	7	1	A	0	2	3	F
SH24TA1	0	9	4	6	1	7	1	A	0	2	3	F
AQT24A2RE	0	8	4	6	1	7	1	A	0	2	3	F
AQT24A2RB	0	8	4	6	1	7	1	A	0	2	3	F
AST24A1RE	0	9	0	0	0	0	1	A	0	2	3	F
SC24TA1	0	9	0	0	0	0	1	A	0	2	3	F
AST24A2RE	0	8	0	0	0	0	1	A	0	2	3	F
AST24A2RB	0	8	0	0	0	0	1	A	0	2	3	F
AQT18A1RE	0	9	7	4	1	7	1	A	0	0	F	B
SH18TA1	0	9	7	4	1	7	1	A	0	0	F	B
AQT18A2RE	0	8	7	4	1	7	1	A	0	0	F	B
AQT18A2RB	0	8	7	4	1	7	1	A	0	0	F	B
AQ18A1RE	0	9	4	4	1	7	1	A	0	2	1	D
SH18ZA1	0	9	4	4	1	7	1	A	0	2	1	D
AQ18A2RE	0	8	4	4	1	7	1	A	0	2	1	D
AST18A1RE	0	9	0	0	0	0	1	A	0	0	F	B
SC18TA1	0	9	0	0	0	0	1	A	0	0	F	B
AST18A2RE	0	8	0	0	0	0	1	A	0	0	F	B
AST18A2RB	0	8	0	0	0	0	1	A	0	0	F	B
AS18A1RE	0	9	0	0	0	0	1	A	0	2	1	D
SC18ZA1	0	9	0	0	0	0	1	A	0	2	1	D
AS18A2RE	0	8	0	0	0	0	1	A	0	2	1	D



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